ExhibitFiles

Summative Evaluation

Conducted for
Association of Science-
Technology Centers

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Executive Summary

ExhibitFiles is an online community of exhibit practitioners developed by the Association of Science-Technology Centers (ASTC) with funding from the National Science Foundation (NSF). The website, which opened on April 26, 2007, provides an infrastructure for sharing and building knowledge about exhibition development and design practices. Tisdal Consulting (TC) was contracted to conduct remedial and summative evaluation studies of this site. The remedial and summative evaluation studies were originally designed as a two-part study, and some of the same data were used to explore questions in both studies. A remedial report was completed in October 2010 (Tisdal, 2010). Carey Tisdal from TC designed and conducted the summative evaluation, and Wendy Pollock, ExhibitFiles Principal Investigator (PI), was the primary client. The purpose of this summative evaluation was to provide information to stakeholding groups about the worth of the site and requirements for sustainability resources after NSF funding ends. The two overarching questions explored by the evaluation were:

1. In what ways and to what extent is ExhibitFiles worth sustaining after the funding period ends?
2. What are the requirements to sustain the online site at a useful level after funding ends?

To address these questions, TC used a constructivist approach to evaluation (Lincoln & Guba, 1985; Guba & Lincoln, 1989; Stake, 1975, 2002; Wolf, 1979). In constructivist evaluation, organizing elements used to focus the evaluation are issues and concerns of stakeholding groups. Issues and concerns for this study were identified through analysis of data from the remedial evaluation. Data were collected through in-depth interviews of individuals from several groups who were involved in the project. Eight issues that could be clarified within the scope of the study were selected for clarification. These included (1) Range of Content, (2) Levels of Awareness and Use, (3) Levels of Growth and Participation, (4) Quality of Content, (5) Branding, (6) Niche, (7) Level and Types of Change, and (8) Human Systems.

Data collected for the remedial evaluation during 2009 and 2010 were used to develop summative findings, along with additional data collected specifically for summative study between April 26 and October 31, 2011. Methods in the remedial study included an analysis of the website database (*N* = 1,357 members), comparison to an association membership database (*N* = 830 members), an online survey of registered members (*N* = 286), and in-depth interviews with the project team and registered members (*N* = 18). Methods for additional data collected for the summative study included a content analysis of the website database (*N* = 89 case studies of exhibitions; *N* = 38 case studies of exhibits; *N* = 252 reviews[1] of exhibits, exhibitions, museums, and groups of museums in cities; and *N* = 70 Bits); an online survey of informal learning practitioners (*N* = 337 respondents); interviews with selected stakeholders (*N* = 7); and website and email statistics.

Findings

Range of Content

An analysis of ExhibitFiles case studies and reviews confirms the perception that the site's content is primarily focused on informal science education. Yet the collection of reviews indicates that exhibit

[1] ExhibitFiles registered members have five templates available for postings. The evaluator found that the review categories had been used flexibly. Authors also had included reviews of entire museums and even groups of museums in a city they were visiting. For these reasons, reviews are not reported by type throughout this report.

practitioners may explore examples of exhibitions in a wider range of museum types for ideas and inspiration, with art museums being a popular choice. The collection of case studies as of 2011 appears to contain examples of a wide and balanced range of budgets and sizes. Of the total 89 exhibition case studies, 25 of these exhibitions were funded by the NSF-ISE program; there are 4 case studies of NSF-funded exhibit components and 8 reviews of components or exhibitions funded by NSF. While NSF-ISE is, not surprisingly, the exhibition funder of the highest number of case studies on ExhibitFiles, the database also contains exhibitions funded by foundations, corporations, other U.S. federal agencies, and state and local government. Users looking for case studies of current exhibitions may be disappointed in finding many examples of case studies of exhibitions that opened in 2006 and 2009 and far fewer prior to or following those years. Several historical and influential exhibitions have been documented through case studies, but, based on an analysis of the noteworthy exhibitions cited by McLean and McEver (2004), several important gaps in the collection remain.

Quality of Content

Concerns heard in stakeholder interviews, particularly among senior-level professionals, focused on the quality of some aspects of case studies. Some respondents observed that authors appeared to be unwilling to admit mistakes and reflect on what went wrong in the process of development. Based on a focused content analysis of the *Lessons learned and mistakes made (and what we did about them)* section of exhibition case studies, the evaluator found that in the collection of case studies as a whole, there was a rich set of lessons learned and deep reflection on best practice. While there was a tendency to frame mistakes as lessons rather than simply as mistakes, there were substantial instances where authors explicated noted mistakes, improvements after mistakes were recognized, and the impact of the lessons and mistakes on their exhibition work after the experience described in the case study. This analysis itself points to the value that could be added to the site, for both professional development and project development, if some ongoing mechanism to promote, facilitate, and encourage synthesis were added. At the same time, we identified a great deal of inconsistency among case studies, with some authors simply ignoring these sections and others providing cursory input. There are also indications that case studies based on less reflection and showing less authentic analysis of the process may provide the basis for the observations about the lack of reflection and analysis—indicators of quality for senior and experienced professionals. Greater levels of guidance (e.g., tutorials and how-to FAQs) and before-posting feedback to authors could be provided, but these efforts would require additional human resources.

Levels of Awareness and Use

While awareness of ExhibitFiles appeared high among members of the National Association for Museum Exhibition (NAME) listserv compared to other groups to which the survey was distributed, this appeared to be due to a sample with a fairly large number of respondents working in science museums and as external exhibit designers. Awareness was highest among those working in science museums at 90.5% (N = 59) and in other sectors (exhibit practitioners working freelance and in exhibit design firms) at 87.5% (N = 32). In contrast, only 30.5% of museum practitioners working in other museum types were aware of ExhibitFiles. This difference was statistically significant ($p < .001$). While not every respondent aware of ExhibitFiles had visited the site, it did appear that the lack of awareness of ExhibitFiles is connected to lower levels of site usage. Among respondents to the Awareness and Branding Survey, who used ExhibitFiles (N = 109), recommendation from a colleague was the most frequently cited source of awareness of the site. Other frequently cited sources of awareness, such as the Informal Science Education Network (ISEN) listserv and the ASTC website, indicate that information about the ExhibitFiles

site has been largely available in the informal science education community. Only 5.5% of respondents reported finding out about the site from an article in *The Exhibitionist,* the NAME professional journal.

Levels of Growth and Participation

Membership and contributions to ExhibitFiles have steadily grown over time, with a shift in contributions from case studies earlier in the life of the site to reviews after mid-2010. While membership and contributions have grown, based on survey responses and statistics from Google Analytics, frequency of visiting the site decreased between 2009 and 2011. This decrease may be due to some changing use of the site, competition from ever-increasing numbers of online resources, or persistent problems with the search functions.

Branding

In-depth interviews with stakeholders indicated different people had differing perceptions and priorities related to the overall purposes, uses, and role of ExhibitFiles in the professional development of exhibit practitioners. Respondents to the Awareness and Branding Survey who had used ExhibitFiles were asked to rate several statements about their perceptions of the site. Due to the composition of the survey sample, the real difference between items was not particularly revealing in defining the brand of the site. Lower rated items appear to indicate problems with the search function and lack of areas for discussion.

Niche

The remedial evaluation reported that a useful way of looking at ExhibitFiles was as a professional development resource among ecology of professional development resources used by exhibit practitioners. In this study, responses to the Awareness and Branding Survey indicate that exhibit practitioners had strikingly different patterns of use of online resources compared to other practitioner groups. There were also differences in use of online resources among groups of exhibit practitioners working in different contexts. Specific online resources listed by exhibit practitioners may be useful if managers of ExhibitFiles develop an extended awareness campaign or wish to develop partnerships with other associations.

Level and Types of Change

Many of the findings from the remedial evaluation related to revisions in human and technical systems are still relevant. An improved search function appears to be the change most urgently requested, along with a revision design of the home page to allow users to identify the purpose of the site and to navigate to specific items among an ever-increasing number of contributions. Clearly, the growth of the site content has exceeded the original site design.

A second priority appears to be continuing, and perhaps increasing, the frequency of the e-newsletter. In addition, requests for areas for discussion of best practices across individual items continued. Users also wanted greater diversity of content in terms of museum types and geographic areas as well as additions of case studies for historic and noteworthy exhibitions. All these changes have implications for the human resources and the systems needed to sustain the site.

Human Systems

In summary, the human resources needed to support sustainability for ExhibitFiles, a site based on user contributions, may require a greater level and different organization of human systems than informational websites that feature a unified source of content. Contributions of case studies appeared to drop when stipends for the core contributors ended. On the other hand, use of the site for ongoing

reviews may continue to develop without the time-intensive efforts that appear to be required to support the submission of case studies. Establishing formal partnerships appears to be a productive path to develop a healthy level of ongoing contributions of both case studies and reviews, yet this activity is also time-intensive. Several changes indicated by both the remedial and summative data may require site redesign.

Conclusions and Recommendations

Overall, levels of membership, numbers of user authored contributions, and level of traffic has far exceeded original expectations of the project team envisioned in 2006. In addition, there is a substantial user base among exhibit practitioners working in science museums as well as those working in exhibit design groups. There is also a high level of awareness among these groups. The site provides an important, although incomplete, archive of NSF-ISE-funded exhibitions, in addition to providing a place for the collective memory of many historic and influential exhibitions. Over the life of the website, museum studies and education programs have discovered it to be a useful resource for developing emerging professionals. Experienced and senior career-stage practitioners have used the site to document and refine their own observations of exhibitions across a wise range of museums. Data related to almost every issue and concern explored in this study support the conclusion that the website is worth sustaining. But a substantial redesign of the site may now be needed precisely because the site has grown beyond its original vision.

The highest priorities for sustainability are included in the two job descriptions developed for the study. These outline basic operational requirements for the site. Based on the findings of this study, continuing the posting and delivery of push e-newsletters to maintain traffic and keep the site in the consciousness of current users is a very high priority. Any level of site change will require planning and development time. Meanwhile, basic site management and technical support need to continue.

At the next level of priority is website redesign to better serve the current core user base of exhibition practitioners working in science museums and as freelance designers and in exhibit design firms. Awareness of the site is higher among this group and the existing content and capabilities of the site better matched their needs. One high priority to better serve this group is to improve access to the information in the large collection of case studies and reviews. The number of members, case studies, and reviews has simply outgrown the assumption that users can easily browse through lists to identify interesting or useful content or people with specific expertise with whom to collaborate. Improved access to content includes, but is not limited to, improvements in basic key-word searching to locate case studies and reviews by content topic, design strategies, formats discussed, and location.

There were consistent calls from ExhibitFiles users across both the remedial and summative studies for additional places to discuss best practices. Based on the large and ever-growing number of LinkedIn groups, blogs, and websites, those planning the future of ExhibitFiles will want to be careful not to duplicate the types of immediate, ongoing conversation available through other sites. Another approach would be capabilities for users to develop and store lists of case studies, reviews, and Bits they located for specific uses and share them with others.

Another priority to better serve the current user base would be to provide site-orientation FAQs and guidelines for the development of case studies and reviews. This recommendation does mean

interfering with the clean, simple design style of the site, which users indicated in the remedial evaluation that they liked. But sites such as the popular project management system Basecamp, and even smartphone customer sites, provide orientation videos and tutorials linked from the home page.

Current homepage components, such as the featured case studies and reviews, Twitter feeds, and area tabs, appear to work well. But in both the Member Survey and the Awareness and Branding Survey, several ExhibitFiles users recommended clear statements about the site's purpose and possible uses that are prominently displayed and accessible to both visitors and logged-in members. These highest priority changes are needed to serve the current user base. In 2012, ExhibitFiles will have been online for six years. In the rapidly changing world of the Internet, the need for a site redevelopment at that stage in the life of a site would not be unusual.

The next level of priority to serve the current user base is filling in the gaps among historic and influential projects, specifically in science museums. This recommendation is based on the original vision of the site as an online resource to serve collective memory for the practice of exhibit design and development. Exhibitions included in the 2004 McLean and McEver book would be on this list, along with exhibitions nominated for the Excellence in Exhibition program of the American Association of Museums (AAM) and NSF-funded projects, many of which have been very influential. A proposal made by the PI to the NAME Board early in 2011 to challenge collaborating museums to contribute case studies of important exhibitions could be one tactic to accomplish this work. Another could be the development of partnerships with museum studies and education programs to pair students with the exhibit practitioners who worked on these projects to assist in the development of case studies.

Finally, NSF or other funding agencies could require submission of case studies by grantees. Given the level of effort required to solicit, nurture, and facilitate the case studies published between 2007 and 2010, it is likely that some form of partnership may be needed to accomplish this work.

Of importance, but at a lower level of urgency, are steps to expand the user base across all types of museums and beyond U.S.-based exhibit practitioners. Members of the stakeholding groups who are currently using ExhibitFiles clearly recognize the value of the site. Calls for greater numbers of contributions across all types of museums and from international sites were identified in both the summative and remedial studies. Expanding the ExhibitFiles user base is recommended, but only after careful strategic planning about how it could be accomplished through human networks and information systems. In addition, satisfaction with the site appears affected by lack of accessibility to postings and search function problems. These issues need to be addressed before time and effort are invested in attracting new members.

Summary

The issues and concerns explored in this study were based on the perspective of a wide variety of stakeholding groups. Although not a question specifically addressed, evidence in this study supports a conclusion that the infrastructure supporting informal science institutions does appear to be increasingly coherent with a shared ecology of information among exhibit practitioners working in and providing services to these institutions. ExhibitFiles appears to be well worth sustaining, but several changes to the website are needed to better serve the current user base. Capacities to access content and synthesize content across individual postings are needed. Expanding the user base and making

intentional efforts to add content across other types of museums and geographic locations are also recommended, but only after careful consideration about the implications for human systems, technology, and levels of financial support that would be needed to develop and operate a site for a larger number of members with a greater diversity of interests.

Acknowledgments

We especially want to acknowledge the contributions of the ExhibitFiles Development Team. Wendy Pollock, ExhibitFiles Principal Investigator, also served as the primary client for the evaluation. Her insightful reflection on evaluation issues and methods, as well as the providing of useful feedback, was sincerely appreciated. Other members of this team, Kathy McLean and Jim Spadacini at Ideum, provided clearly expressed perspectives and shared their memories of a highly collaborative development process.

Additional thanks goes to Wendy Hancock at the Association of Science-Technology Centers (ASTC) who clarified many daily operational issues of ExhibitFiles, located hard-to-find references, and made accessing people and files much easier. At Ideum, James Kassimi, Thomas Patinsky, and John Butler downloaded selected fields from the ExhibitFiles database. This was not a trivial task, and their skill and patience in providing information in a usable form established the firm foundation for the content analyses in this report.

ExhibitFiles advisors and core contributors, many of whom made themselves available for interviews, played an important role in the development of the site and in the evaluation. They include:

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Finally, and perhaps most importantly, thank you to the ExhibitFiles members and other informal learning practitioners who responded to surveys and participated in in-depth interviews. Their perspectives, ideas, and information about where they work and how they work made a valuable contribution to the development of the fields in which they work.

Introduction

ExhibitFiles is an online community of exhibit practitioners developed by the Association of Science-Technology Centers (ASTC) with funding from the National Science Foundation (NSF). The website, which opened on April 26, 2007, provides an infrastructure for sharing and building knowledge about exhibition development and design practices. Tisdal Consulting (TC) was contracted to conduct remedial and summative evaluation studies of this site. Prior to this, a formative evaluation report (Randi Korn & Associates, 2007) informed site development. The remedial and summative evaluation studies were originally designed as a two-part study, and some of the same data were used to explore questions in both studies. A remedial report was completed in October 2010 (Tisdal, 2010). Carey Tisdal from TC designed and conducted the summative evaluation, and Wendy Pollock, ExhibitFiles Principal Investigator (PI), was the primary client.

The purpose of this summative evaluation was to provide information to stakeholding groups about the worth of the site and requirements for sustainability resources after NSF funding ends. The two overarching questions explored by the evaluation were:

1. In what ways and to what extent is ExhibitFiles worth sustaining after the funding period ends?
2. What are the requirements to sustain the online site at a useful level after funding ends?

To address these questions, TC used a constructivist approach to evaluation (Lincoln & Guba, 1985; Guba & Lincoln, 1989; Stake, 1975, 2002; Wolf, 1979). In constructivist evaluation, organizing elements used to focus the evaluation are issues and concerns. This focus contrasts with some other approaches to evaluation where the organizing elements are impacts, outcomes, or project goals. Formal definitions of concerns and issues are useful to keep in mind.

> *A concern is any matter of interest to one or more parties about which they feel threatened, that they think will lead to an undesirable consequence, or that they are anxious to substantiate a claim requiring empirical verification (Guba & Lincoln, 1989 p. 304).*
>
> *An issue is any statement, proposition, or focus that allows for different, often conflicting, points of view; any proposition about which reasonable persons may disagree; any point of contention (Guba & Lincoln, 1989, p. 304).*

Based on an analysis of issues and concerns from the remedial evaluation and in-depth interviews with a range of stakeholders, the evaluators identified and selected eight issues and concerns to clarify in this study. These included:

1. **Range of Content**—In the remedial study, TC found different perspectives about whether the range of content on the ExhibitFiles website was adequate. For many respondents, the range of content was excellent, and they enjoyed finding out about what others were doing. Yet others wanted more art, history, and children's museum case studies. Still others wanted more case studies and reviews from museums outside the United States. In stakeholder interviews core contributors and experienced professionals had concerns as to whether the most influential exhibitions from the past 50 years had been documented.
2. **Levels of Awareness and Use**—While the total number of exhibit practitioners, in the U.S. or around the world, is not known, the project team assumed that members of National

Association for Museum Exhibition (NAME) constituted a primary target audience of ExhibitFiles. The remedial study explored overlapping membership. Using the February 2009 NAME membership list (*N* = 830), the evaluator found that only 14.7% (*N* = 122) of individuals on the NAME membership list also appeared on the ExhibitFiles database (November 2009). In addition, we found that 9.1% (*N* = 122) of ExhibitFiles registered members also appeared on the NAME membership list. These relatively low levels of overlapping memberships raised a question as to whether NAME members had simply chosen not to participate, or if they were not aware of the site. In addition, not all exhibit practitioners are members of NAME. The overall level of awareness of ExhibitFiles among exhibit practitioners as a whole was unknown.

3. **Levels of Growth and Participation**—In the remedial evaluation, and again in stakeholder interviews, ExhibitFiles members called for a greater diversity of users, specifically in terms of diversity of site members contributing content. In 2011, Bits was added to the site to reduce the time and effort to participate and move members from the reading to contributing level of participation. Since the remedial study conducted in 2010, the site has continued to grow in membership. There was a drop, however, in the number of case studies after 2010. Levels of overall site traffic in relation to membership growth were unclear.

4. **Quality of Content**—Concerns heard in stakeholder interviews, particularly among senior-level professionals, focused on the quality of some aspects of some case studies. Some respondents observed that authors appeared to be unwilling to admit mistakes and reflect on what wrong in case studies. Some users in both online surveys noted a self-congratulatory tone to some case studies and observed that authors focused only on what had gone well. To clarify this concern, the evaluator focused on one area, the *Lessons learned and mistakes made (and what we did about them)* section of exhibition case studies.

5. **Branding**—In-depth interviews with stakeholders indicated different people had differing perceptions and priorities related to the overall purposes, uses, and role of ExhibitFiles in the professional development of exhibit practitioners. Perspective differed about the desired mix of content in terms of museum type, geographic reach, and whether the site was primarily for discussion and keeping up to date or for systematic review of exhibitions for the development of new projects and proposals. ExhibitFiles user perceptions of these issues were explored.

6. **Niche**—Questions stakeholders had about the niche of ExhibitFiles were closely related to issues of both branding and awareness. The remedial evaluation reported that a useful way of looking at ExhibitFiles was as a professional development resource among an ecology of professional development information and experiences used by exhibit practitioners. Based on a review of listservs and groups, the evaluator observed that the ecology online professional development and information resources for different practitioner groups and exhibit practitioners working in different contexts appeared to vary. Understanding these differences provides an explanation for different levels of awareness. In addition, if ExhibitFiles managers decide to raise awareness, build partnerships with other professional associations, and diversify content, then knowing the ecology of online resources will inform those efforts.

7. **Level and Types of Change**—In stakeholder interviews, the evaluator heard diverse viewpoints about the level and types of change needed to sustain ExhibitFiles at a useful level. Some

respondents assumed that since initial development of the website had been completed during the grant-funded period, the level of change would be minimal and the site could go forward on operational status. Others assumed that a redevelopment of the site was needed due to the growth of the content beyond original expectations and the ongoing innovations to online experience.

8. **Human Systems**—One important issue identified in stakeholder interviews was the type and level of human resources needed to move ExhibitFiles into the future. Some respondents expressed the idea that since ExhibitFiles was up and running, human resources could now be minimal, checking to make certain the site was online and providing basic levels of site maintenance. Others, some of whom had been involved more deeply in the site's development and operation, noted the roles of the project team in soliciting and monitoring contributions, and in organizing core contributors' efforts. These and other respondents expressed the need for extended formal partnership with associations and groups, which could account for other responsibilities requiring considerable time. This issue was explored through analyzing the current system and assessing it in terms of prospective changes than may be needed for the site.

Data collected for the remedial evaluation during 2009 and 2010 were used to develop summative findings, along with additional data collected specifically for summative study between April 26 and October 31, 2011. Methods in the remedial study included analysis of the website database (*N* = 1,357 members); comparison to an association membership database (*N* = 830 members); an online survey of registered members (*N* = 286); and in-depth interviews with the project team and registered members (*N* = 18). Methods for additional data collected for the summative study included content analysis of the website database (*N* = 2,008 members, *N* = 127 case studies, *N* = 252 review, and *N* = 79 Bits); an online survey of informal learning practitioners (*N* = 337 respondents); interviews with selected stakeholders (*N* = 7); and website and email statistics.

Background

The story of ExhibitFiles development and evolution is one of constant change in membership, content, and features, developing in the context of a rapidly changing digital world that influenced user options and expectations. Figure 1 shows the ExhibitFiles homepage as it appeared on January 14, 2012.

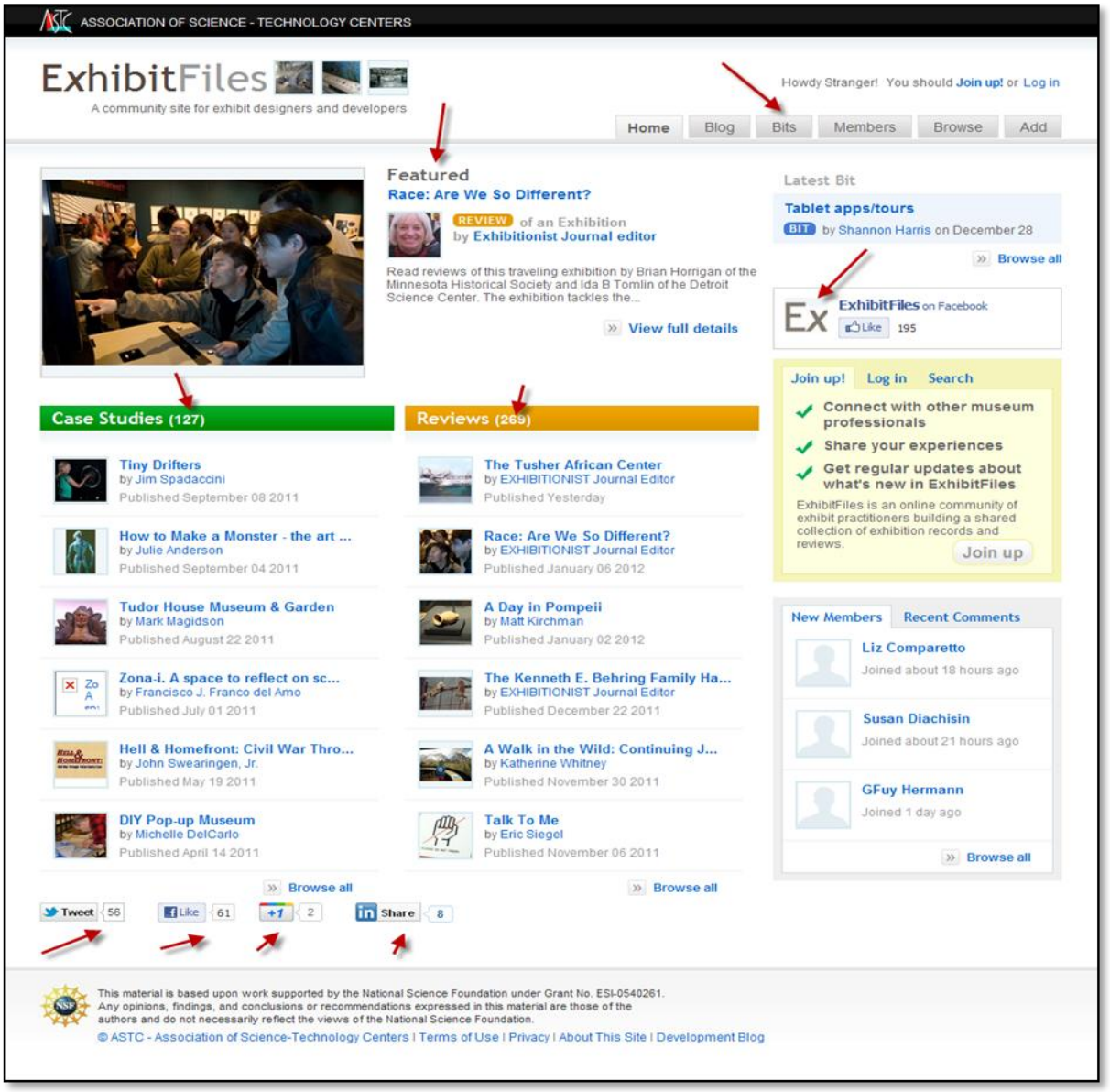

Figure 1. Homepage of ExhibitFiles (January 13, 2011).

The red arrows in this screen shot shows some the changes to the site that changed or were added since April 26, 2007, when ExhibitFiles opened.

Development and Opening of the Site

Prior to its opening on April 26, 2007, ExhibitFiles was populated with content and tested with a group of core contributors. From the beginning, user-created content could be uploaded in specified formats. Visitors to the site were encouraged to register to use all the site functions. Registered users were requested to complete profiles to provide information about themselves to others in the community. Registration allowed users to upload information, comment on case studies and reviews, mark case studies and reviews as favorites, and select other registered users as contacts. While the site was funded through an NSF grant to ASTC, the site was open to all exhibit practitioners, including those working in and with art, history, and children's museums.

The *About ExhibitFiles* section of the website presents the goal of the site and the rationale for its development.

> *ExhibitFiles is an online community of exhibit practitioners building a shared collection of exhibition records and reviews. It's a place to connect with colleagues, find out about exhibits, and share your own experiences.*
>
> *We developed ExhibitFiles to preserve and share experiences and materials that are often unrecorded, temporary, and hard to locate. Museum exhibitions change, so does staff, and knowledge is often lost. We think it's important to build on what others have done and learned and to open our work to comment and review.*
>
> *ExhibitFiles was created with support from the National Science Foundation by the Association of Science-Technology Centers, Ideum, Independent Exhibitions, and a dedicated group of Core Contributors. Carey Tisdal of St. Louis, Missouri, is the project evaluator. (Association of Science-Technology Centers, 2011).*

The opening of this site was the result of an ongoing design process taking place in the rapidly changing context of ideas about what was then called Web 2.0. This term refers to web applications that support user-generated content, social networking, and collaboration. The web designer noted the influence of Maeda's *Laws of Simplicity* (2006) on the development of the user interface and site organization, making it uncluttered, intuitive, and free of heavy prompts and help functions typical of earlier web applications. Many important websites with user-generated content came online during the time in which ExhibitFiles was being conceptualized, developed, and tested. ExhibitFiles was funded in December 2005. Facebook opened to everyone 13 years and older with a valid email address in September of 2006, YouTube in February of 2005, and Twitter opened to the public in July 2006. As the ExhibitFiles site designer explained:

> *The web was becoming more user-centric. . . . The idea [is] that anybody in ExhibitFiles out of the 1100 plus members can author something. It's a very large distributed blog format in its most basic sense, with the focus, of course, on exhibits and exhibitions. And that's really the power of it, and that's—that's a very simple concept. And it's also a concept that's fueled this whole Web 2.0 revolution . . . it's the individual publishing, rather than an organization publishing* (EXF1_DI_PT_Cases 4-1_051510).

This concept of a "distributed blog format"—how it could be accessed and used, and how its impact could be determined—became better understood over the life of the project. During the development process, the team unearthed additional and better theoretical lenses and conceptual frameworks. Case

studies developed for the NSF-funded project and book *Are We There Yet? Conversations about Best Practices in Science Museum Exhibits* (McLean & McEver, 2004) provided a model of documenting best practices. The project team began with a concept of archiving exhibition development case studies. This original conception was influenced by Web 2.0 with user-generated content to grow into the idea of a community of users sharing knowledge and resources.

Learning theories based on communities of practice also influenced the design of ExhibitFiles. As one member of the project team explained, "We aren't just creating an archive; we are creating a connection and a community" (EXF1_TDI_PT_Cases 1_2_072308). This theory appeared well suited to Web 2.0 strategies.

> *Communities of Practice presents a theory of learning that starts with this assumption: engagement in social practice is the fundamental process by which we learn and so become who we are. The primary unit of analysis of this process is neither the individual nor social institutions but rather the informal "communities of practice" that people form as they pursue shared enterprises over time.*
>
> *In order to give a social account of learning, the theory explores in a systematic way the intersection of issues of community, social practice, meaning, and identity. The result is a broad conceptual framework for thinking about learning as a process of social participation (Wenger, 1998).*

Brown's (1999) conception of digital learning as part of a learning ecology also informed thinking about ExhibitFiles.

> *Knowledge has two dimensions, the explicit and the tacit. The explicit dimension deals with concepts, the know-whats, whereas the tacit dimension deals with know-how.*
> *Know-how is best manifested in work practices and skills. Since the tacit lives in action it comes alive in and through doing things and in participation with each other and the world. As a consequence, tacit knowledge can be distributed between people in terms of a shared understanding that slowly emerges from working together, a point that we will return to (p. 3).*

The PI and project director (Pollock, then an ASTC employee,) formed and ExhibitFiles team. This team included the Co-PI (McLean), site designer (Spadaccini), and another ASTC staff member (Hancock). In addition, core contributors had the role of providing feedback during development and to populating the site with case studies and reviews before opening. After opening, the core contributors were encouraged to continue developing case studies and reviews and to continue sparking discussion through their comments on the site.

Impact and 2008 Snapshot

In July 2008, the project directors developed a revised set of project impacts consistent with new guidelines from NSF (Friedman, 2008). While these impacts closely paralleled the initial outcome statements, they also reflected a greater understanding of the nature of online communities developed by the project team and a better understanding of the potential of the community. They also included the team members' own growing understanding from iterative testing and review of site features. The revised impacts included the following:

- Impact 1: ISE professionals will generate and share knowledge about exhibition development practices by participating in an online community.
- Impact 2: ISE professionals will develop individual knowledge about successful and unsuccessful exhibition development practices.
- Impact 3: ISE professionals will develop a web of social connections and contacts to allow them to call on or consult colleagues (personally or through text-based resources) with expertise in specific areas related to exhibition development.
- Impact 4: ISE professionals involved in exhibition development will make use of ExhibitFiles to inform their work (Pollock & McLean, 2008).

In July 2008, as part of the preparation for the summative evaluation of ExhibitFiles, the evaluator took a snapshot view of the first year of the website's growth (Tisdal, 2008A). We based this analysis on the records available from the website database and Google Analytics. The number of registered users by the end of the first 12 months far exceeded the initial target. The target number was 100 users; 613 individuals registered on the site by March 31, 2008. The target number of visits was 1,000 visits per month by the year-one anniversary. The site reached 1,640 visits the first month it opened and continued its growth through the snapshot date of July 14, 2008.

The targeted number of case studies was 40 by the year-one anniversary. By March 31, 2008, 60 case studies were available online. By the snapshot date (July 14, 2008), 71 case studies were online. The target number of reviews was 20 by the year-one anniversary. During the first year the website operated, users published 42 reviews. Monthly contributions showed steady growth in the number of total reviews throughout the year. This level of activity points to successful strategies used to initiate and facilitate the posting of case studies and reviews (Tisdal, 2008A).

Some other indicators showed participation at lower levels than desired. The project team targeted an average of five comments per registered user by the year-one anniversary. The evaluator did not have data on this indicator, but a cursory examination of the website indicated that commenting may not yet be a well-established practice outside of a group of frequent users. Hoadley & Kilner (2005) point out the importance of this function.

> *Conversation is the most effective mode of knowledge transfer and generation, because the personal connection and back and forth nature of conversation provide the greatest context for information [1]. The challenge of the knowledge building community is to generate conversations that draw out meaningful knowledge, not aimless chatter. . . . Moreover, a clear sense of shared purpose within the community fosters a culture of productive conversation, where everyone involved understands that the goal of every conversation is to support the purpose, not just talk for talk's sake (p. 34).*

Finally, and perhaps most importantly, the project team intended that users make use of the knowledge from reviews, case studies, blogs, and social connections in their work. Hoadley & Kilner (2005) stress that online communities fail if they do not have clear and practical uses for their members. In the formative evaluation report (Randi Korn & Associates, 2007), there was some indication that this was an issue with ExhibitFiles.

> *As interviewees discussed the value of contributing to ExhibitFiles, it became clear that they were unsure of the purpose of ExhibitFiles and offered suggestions that would radically change the intent of the Web site. For example, a few interviewees suggested that the case studies be reformatted to be less narrative and more standardized with searchable fields in a database format. These interviewees thought project management details such as the exhibition's development costs, fabrication costs, square-footage, timeline, key staff, etc., should be included for each case study and emphasized the importance of standardized information to enable users to search the case studies by specific exhibition parameters (e.g., size, cost). Conversely, a few others thought ExhibitFiles should be less formal and more like a listserv or blog in which users could post a question or a quick comment rather than writing an article. Finally, one interviewee thought ExhibitFiles should be more like an online journal with an editorial board and reviewers to evaluate content before it is posted (p. 2).*

As the site design emerged, the project team envisioned a range of uses. These included generating creative ideas, serving as a benchmark for innovation, documenting successful and unsuccessful practices, and helping people know whom to call to discuss a design challenge. During initial meetings, project directors discussed the prospect of using the exhibition development process in Kathleen McLean's *Planning for People in Museum Exhibitions* (1993, p. 51) to provide explicit examples of where and how the ExhibitFiles could be used in practical work. To the project team, some sites uses appeared obvious but these uses were not entirely clear to those visiting the site.

In addition, developers set the target number of five contacts per registered user by the year-one anniversary. As of July 14, 2008, almost three months after the anniversary date, the average number of contacts selected by the 793 registered users was 1.1, well below the target level. The project team needed feedback from users about why individuals chose to comment or not comment, what cued users to favorite items, and how users perceived and used the contacts function. This feedback would be used to inform decisions about increasing participation in these areas. As Butler, Sproull, Kiesler, & Kraut (2008) found, users participating in online communities have differentiated roles based on different benefits. At this point, feedback from ExhibitFiles members was needed to inform the project team about the reasons users did or did not comment and find what a realistic level of participation overall. To enable continued development of the site and support a remedial evaluation, the project team applied for and received a project extension through the end of 2011.

Remedial Evaluation and Addition of Bits

In addition to supporting decisions about ongoing website revisions related to both the technical and human design elements, the remedial evaluation also provided the opportunity to develop an explicit program theory (Weiss, 1998, p. 55) and a deeper understanding of the patterns of use and perspectives among the members of this online community.

One important addition, Bits, was implemented in early 2010 (Pollock, 2010, February 5), during data collection for the remedial study. This new feature allowed members to upload a question or comment along with a photo or a video. The rationale was to provide an additional way to participate by contributing content that required less development time than case studies and reviews. It also made it easier to link to media elements that had been uploaded to Flicker and YouTube.

The evaluator presented and discussed preliminary remedial findings with the project team in June 2010, at which time decisions about the priorities among site revisions were made. Information about the need for technical improvements also influenced priorities. After that date and prior to the date of the remedial report, the project team made several changes. These included the ability to pull information into member profiles from other social networking sites such as LinkedIn, the addition of sorting features to improve the ease of locating of member pages, improved search features, and increased browser compatibility and boosted speed (Pollock, 2010B).

In general, the remedial study (Tisdal, 2010) indicated that ExhibitFiles had attracted its target audience. Site design features appeared usable and easy to navigate. Respondents wanted improved search functions and places for more discussion across exhibits and exhibitions. Contributions of case studies and reviews appeared on par with other web-based social networking sites. Among some respondents, however, there were some perceptions that there should be more case studies and reviews, more members, and greater levels of participation by registered members. Online survey items with significant positive correlations were frequency of visits, frequency of reading reviews, and the extent to which the site met expectations. These correlations signified that more members, more content, and more frequent visits could have the potential to increase the impact among larger numbers of registered members.

Respondents to both the survey and the in-depth interviews pointed out the importance of receiving email reminders about new items on the site. They saw ExhibitFiles as only one part of the larger professional development picture for exhibit and exhibition professionals. Conferences and workshops were rated as higher-impact experiences. But ExhibitFiles was rated at a higher level of impact than membership in the National Association for Museum Exhibition, participating in the Informal Science Education Network (ISEN) listserv, participating in ASTC Connect, and using informalscience.org and the Center for Advancement of Informal Science Education (CAISE) website. Respondents saw ExhibitFiles as supporting and extending their professional community by keeping them up to date on current trends and providing a place to go for inspiration and to research the work of others in developing new projects. There was no consensus about the value of encouraging a stronger culture of critique of others' work. Respondents did, however, value frankness and openness from contributors about their own challenges and problems.

Recommendations fell into two major areas: (1) revisions to the site design; and (2) expansion of the human systems used to manage and build community among members. The highest priority site revision was improvement of search functions for content and members. Improved search functions should support targeted visits to prepare grant applications, find information for new project development, and locate colleagues with whom to discuss ideas and solve problems. The website blog appeared a promising place for discussions and ideal for announcing changes and events in the field, but relatively few users go to the blog on a regular basis. The blog needs to be a more visible element if it is to be used in these ways.

Some respondents recommended that the project team extend the role of core contributors, asking them to contact colleagues to request case studies and reviews for specific sectors of the informal learning field, e.g., children's museums, history museums, art museums, zoos, gardens, or parks. Other promising ideas from respondents included having guest bloggers and setting deadlines for the submission of case studies and reviews on specific themes.

Respondents cited lack of time and the priority of other work as obstacles to participation. To overcome these obstacles, recommendations included expanding opportunities for the contribution of brief content, revising favoriting functions, and increasing opportunities for discussions. They recommended also that the project team build awareness of the benefits of a coherent and lively professional community among senior managers in institutions and among those who contract exhibit design and development services to support the time it takes to build expertise and community in the field.

Continued Evolution of the Site

The site continued to evolve during 2010 and 2011 during the summative evaluation study. Expanded versions of push emails were sent to registered members on a more frequent basis in 2010 and 2011. To prompt visits to the site, a newsletter-format email was developed by the project PI beginning in August 2010. The e-newsletter featured new submissions and highlighted topics of potential interest to ExhibitFiles readers. Eleven of these e-newsletters were sent between August 2010 and December 2012.

As the terminology about web-based activity shifted from discussions of Web 2.0 to discussions of social media and the importance of making connections among various platforms, additional options for diffusing ExhibitFiles content through other social media sites were added. Members could connect to Twitter, Facebook, Google+, and LinkedIn directly from the home page, case study pages, review pages, and Bits pages. In addition, the PI opened a Twitter account on July 30, 2010, and an ExhibitFiles Facebook page on December 15, 2010. In a presentation at the Visitor Studies Association (VSA) Conference, (Pollock & Tisdal, 2011), Pollock shared her strategy in establishing these connections to facilitate the broader sharing of the content developed as part of the ExhibitFiles community. Pollock referenced a Future of Exploration Network (2008) report that envisioned content becoming independent of its media platform as it flowed through and among various media on the web. Figure 2 shows the Future of the Media Lifecycle reference in this presentation.

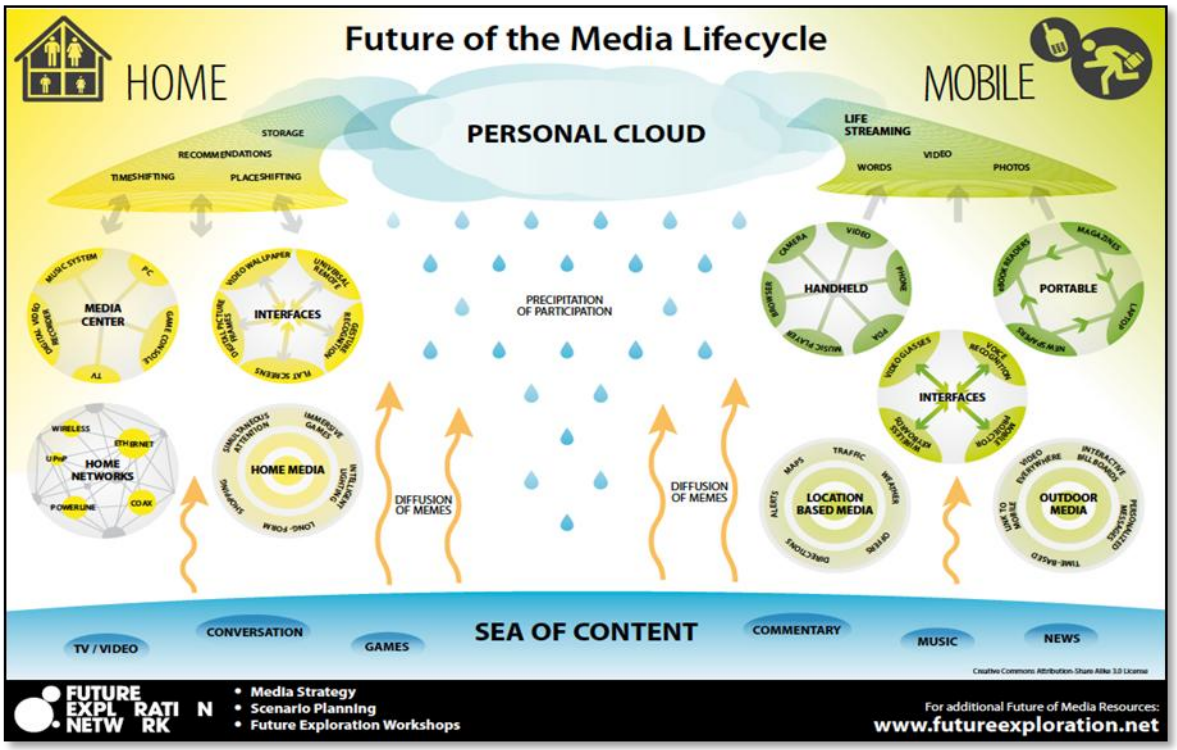

Figure 2. Future of the media lifecycle (Future of Exploration Network, 2008, pp. 6–7).

Finally, through CAISE, ExhibitFiles was one of seven website included in the Informal Commons. Informal Commons was developed to provide searches across professional development sites in the informal education field. This effort aims to make it easier and more efficient to find, synthesize, share, and use information for project, proposal, and professional development activities in informal science. The beta version of this website went online during 2011. Information about this test version of this online resource was released only to targeted groups during this time period. Figure 3 shows the home page of the Informal Commons website.

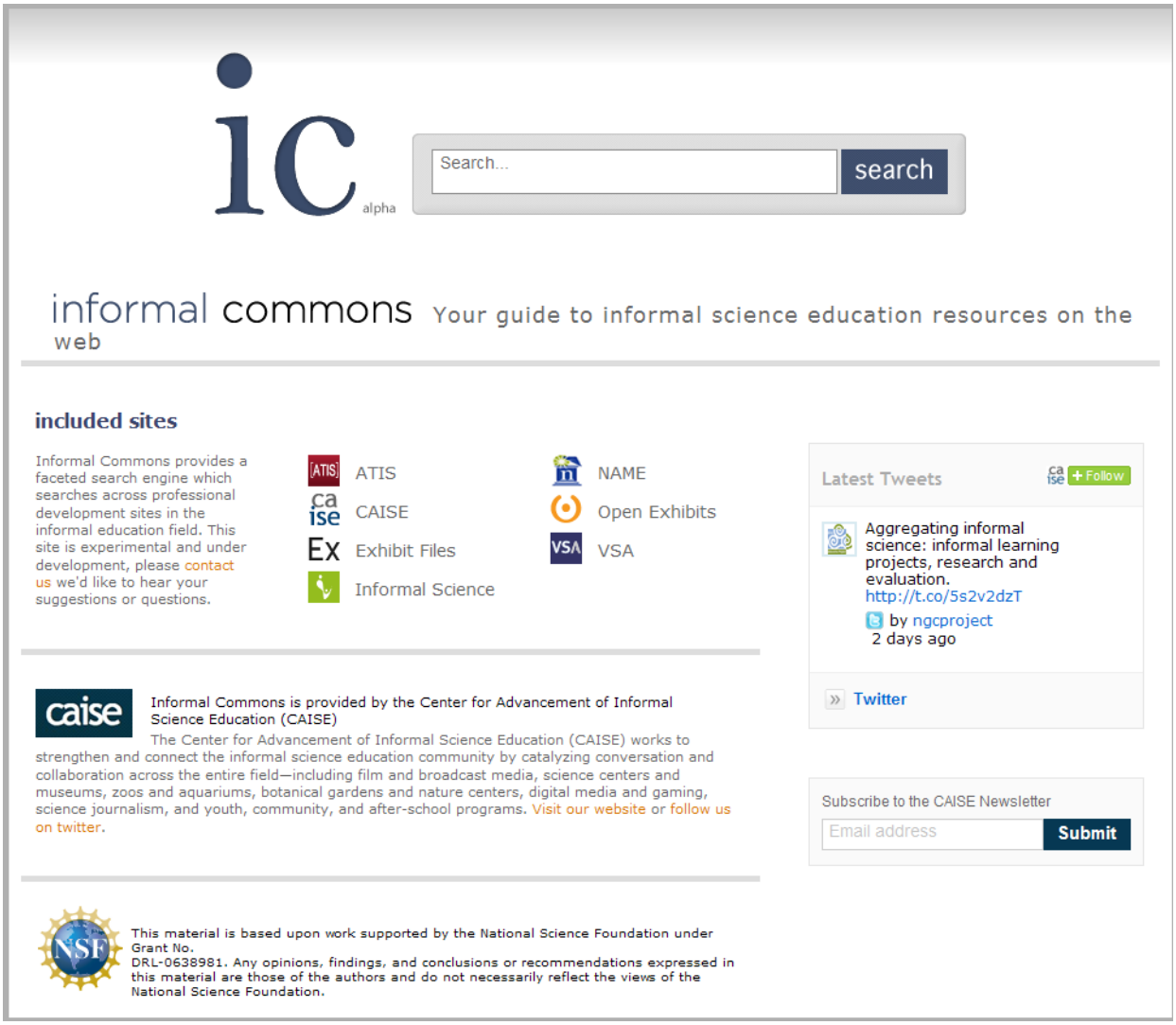

Figure 3. Informal Commons, beta version, January 14, 2010.

Summative Evaluation Approach for an Evolving Site

Originally, the summative evaluation of this project was planned as a two-part study built around a comparison between surveys of ExhibitFiles members during the initial phase, closely followed by a survey of National Association for Museum Exhibition members. When email addresses were not available for NAME members, the design of the summative evaluation had to be redesigned. In addition, as the funding period drew to an end, most salient questions about the site among the project team refocused on sustainability. Moreover, summative evaluation is generally not recommended until the object of the study has reached a mature, somewhat stable form in order to allow groups to make decisions about the dissemination of the entity (e.g., product, program, exhibition, or media). Yet, as the previous background discussion indicates, ExhibitFiles has been, and probably will continue to need to

be, a continuously evolving site to meet the changing needs and expectations of exhibit practitioners in a still fairly new ecology of content flow among various digital and social media. Finally, during the remedial evaluation, the evaluator identified several additional concerns about the site (e.g., levels of awareness, appropriate range of content) and issues (levels of resources for human and technical system) about which important stakeholders had different perceptions.

Given this context, an adaptation of constructivist methodology appeared well suited to design and conduct the summative evaluation of ExhibitFiles. In the case of ExhibitFiles, and probably other social media sites where users make choices about their own level of participation, create content, and transport ideas, information, and relationships across a complex ecology of media and face-to-face environments, the object of this evaluation is truly a moving target that changes after each snapshot of participation and each upload of information. Constructivist evaluation, with its use of multiple perspectives and multiple sources of evidence to draw conclusions, appeared to be an appropriate approach.

Methodology and Methods

This section includes a discussion of the overarching methodology of this summative evaluation, an adaptation of naturalistic-responsive or constructivist evaluation (Wolf, 1979; Guba & Lincoln, 1989) followed by a presentation of the specific methods used to collect and analyze data in order to develop findings and draw conclusions. Both qualitative and quantitative methods were used. While some associate constructivist evaluation primarily with qualitative methods, the evaluator of this study believes that both can be used appropriately under the umbrella of this approach. Qualitative methods provide access to deep understanding from multiple perspectives of stakeholders; quantitative findings allow readers to understand the scope and range of effects and impacts. Together, these methods provide stronger and clearer evidence upon which to base findings and conclusions and to make decisions. While quantitative methods and some inferential statistics are included in this study, overarching findings and conclusions are based on triangulation of data from multiple sources and perspectives. This is particularly important in evaluation, where it is often necessary to develop and use instruments to explore questions unique to a specific context or audience. By triangulating data, readers can use patterns and evidence beyond levels of significance to make judgments about the credibility and trustworthiness of findings.

Methodology

The goal of data collection and analysis in this study was to clarify issues and concerns of important stakeholding groups about worth and sustainability. Guba & Lincoln (1989) define stakeholding audiences as follows:

> *A group of persons having some common characteristics (for example, administrators, teachers, parents, students, sponsor, clients, and the like) that have some stake in the performance (or outcome or impact) of the evaluand, evaluated (p. 304).*

A list of stakeholding groups identified for this study is presented in the Findings section.

The specific data collection design was emergent. Abma (2005) explains the difference between a preordinate and emergent design. According to Janesick (2000), in naturalistic-responsive evaluation, design:

> *[g]radually emerges in conversation with the stakeholders. Metaphorically one may compare the designing process in a responsive evaluation with improvisational dance. Whereas the minuet prescribes the definite steps, definite turns and foot and arm movements, improvisation is spontaneous and reflexive of the social condition. The evaluator charts the progress and examines the route of the study as it proceeds by keeping track of his or her role in the research process (p. 280).*

In naturalistic-responsive evaluation, organizing elements used to focus the evaluation are issues and concerns. This contrasts to some other approaches to evaluation, where the organizing elements are impacts, outcomes, or project goals.

> *A concern is any matter of interest to one or more parties about which they feel threatened, that they think will lead to an undesirable consequence, or that they are anxious to substantiate a claim requiring empirical verification (Guba & Lincoln, 1989, p. 304).*

Issues may be identified from with and between stakeholding audiences:

> *An issue is any statement, proposition, or focus that allows for different, often conflicting, points of view; any proposition about which reasonable persons may disagree; any point of contention (Guba & Lincoln, 1989, p. 304).*

Descriptions of the issues and concerns identified and clarified in this study are discussed in the Findings section of this report.

Phases of the Study

The evaluation was carried out in four overlapping phases (Wolf, 1979), with targeted dates, purpose, and anticipated methods:

Phase One: Preparation

- Purpose: Defining the scope, focus, and resources for the evaluation
- Time: February–May 2011
- Methods: Document analysis and in-depth interviews

Identification of Issues and Concerns

- Purpose: Identifying a range of stakeholding groups, their issues and concerns, and prioritizing those issues and concerns
- Time: March–July 2011
- Methods: Document analysis and in-depth interviews

Clarification of Issues and Concerns

- Purpose: Collecting and analyzing data to clarify important issues and concerns
- Time: August 2011–October 2011
- Methods: In-depth interviews, online survey, program records (e.g.,. iContact and Google Analytics), and content analysis

Reporting

- Purpose: Reporting findings to stakeholding groups
- Time: November 2011—January 2012

Stakeholders

In Phase 2 of the study, stakeholding groups were identified, as were issues and concerns held by members of those groups. Issues were identified from the remedial study and through interviews with members of stakeholding groups. When direct interviews were not possible, possible risks and benefits for each group were considered and included in the identification and selection of issues and concerns. Stakeholding groups are groups of people with common characteristics who have something to benefit or something at risk based on the findings of the evaluation and/or the project. Discussions in interviews and with members of the project team identified the following list of stakeholding groups, with a brief description of their stake in the project.

Project Participants

1. Project Team—These are the individuals who developed the site and are invested in its future after grant funding ends.
2. Core Contributors—This group of individuals invested time and energy in the development of the site by contributing case studies and reviews, commenting, and soliciting contributions from colleagues.
3. ASTC Staff Members—ASTC is the organizational sponsor of the project and the place where decisions will be made about whether to continue sponsorship and management of the site. ASTC members are informal science institutions, and the organization sponsors several online resources for the informal science field. It is the lead organization for the CAISE, a cooperative agreement funded by NSF-ISE that is involved in several field and infrastructure building projects for the informal learning field that includes, but is not limited to, museums.
4. NAME—This committee of the American Association of Museums (AAM) comprises members of the target audience some of whom have not joined the site as registered members. Several NAME Board members and members served on the team of Core Contributors. Official partnership roles have been discussed over the life of the site.

Funders

1. NSF-ISE—As funder of the site, NSF-ISE has particular interest in the overall quality of informal learning experiences in science-focused museums. This NSF program has funded many exhibition projects over time and has a vested interest in the knowledge gained from these projects being shared among a wide range of informal science learning institutions and impacting the practice of exhibition design and development in these institutions. ExhibitFiles, along with CAISE and InformalScience.org, is part of an ongoing effort to build a coherent and useful infrastructure for the informal science learning field.
2. Other Potential Funders—As the future and sustainability of ExhibitFiles is planned, other funding sources and mechanisms may be considered. ExhibitFiles case studies include information on exhibition funding sources. Frequently cited sources include foundations, corporations, government agencies, and private donors. These funders may or may not have the same priorities as NSF-ISE.

Current and Potential Site Members

1. Leading Professionals—These are exhibit and exhibition designers and developers who have made significant contributions to the field over the course of their careers. They have high levels of knowledge and expertise and a track record of work.
2. Mid-career Professionals—These are exhibit and exhibition designers and developers who have a track record of work and who may move into roles of leading professionals and also have current, ongoing work to contribute to the field.
3. Emerging Professionals—These are exhibit and exhibition designers and developers who are just beginning careers in the field. They may have lower levels of knowledge and expertise and less significant track records of work. They are already working in the field.
4. Museum Studies Instructors and Students—This group represents both instructors and students in museum studies and museum education programs. Some instructors may be leading professionals in exhibit design and development and others may have high levels of knowledge and expertise in related museum fields (e.g., research, evaluation, educational programming, and administration). They may or may not use ExhibitFiles as part of their curriculum in various museum studies courses. Students may or may not be assigned to use the site.
5. Science-focused Exhibition Developers—These are individuals who are currently working in science-technology centers, science museums, zoos, botanical gardens, aquariums, and other cultural institutions primarily focused on science disciplines. Their career paths may or may not have included experience in other types of museums.
6. Non-science-focused Exhibition Developers—These are individuals whose current work context is in children's museums, art museums, history museums, and historic sites. Though they were a minority of registered members at the time of the remedial study, respondents were outspoken about the need for case studies reflecting the types of museums in which they worked.
7. Related Professionals—These include researchers, evaluators, grant writers, visitor services staff members, and others who work with exhibit developers and designers and support exhibitions in museums. ExhibitFiles provides a resource for these groups of informal learning practitioners. The remedial evaluation indicated they make up about 42.8% of registered members of the site.
8. Non-U.S. Exhibit Practitioners—This group of unknown population size made up about one-third of registered members at the time of remedial study. Member Survey respondents from this group were outspoken about the need for a less U.S.-centric focus for the website.

Methods

Findings and conclusions in this report are based on data collected for both the remedial and summative evaluation studies. Data collected during the remedial evaluation are shown in Table 1.

Table 1. Data Source Table—Data Collected during the Remedial Evaluation Study

Method	Type	Number	Unit	Dates Collected	Sampling Method
In-depth Interviews	Project Team and Core Contributors	5	Respondents	July 28, 2008, and May 15, 2009	Purposive
In-depth Interviews	ExhibitFiles registered members	13	Respondents	December 3, 2009, to May 17, 2010	Purposive
ExhibitFiles Member Survey	ExhibitFiles registered members	286	Respondents	January 21, 2010, to February 15, 2010	Population (Response rate 21.4%)
ExhibitFiles Database	Registered members	1,339	Records	November 2009	All
NAME Member Database	NAME members	830	Records	February 2009	All

In-Depth Interviews with ExhibitFiles Team Members

To provide a framework for remedial study, evaluator developed a Program Theory based on five in-depth interviews with the ExhibitFiles project team and core contributors conducted between July 28, 2008, and May 15, 2009. As Weiss (1998) points out, "For evaluation purposes, it is useful to know not only what the program is expected to achieve but how it expects to achieve it " (p. 55).

In-depth Interviews with Registered Users

For the remedial study, the evaluator conducted 13 in-depth interviews with registered members, some of whom were core contributors. Respondents were purposely selected based on their level of participation. The 1,339 registered members of ExhibitFiles in November 2009 were divided into to three groups by levels of participation developed from records in the ExhibitFiles Database.

- High = contributed at least one case study or review, commented and used favorites
- Medium = no case studies or reviews but commented or used favorites more than once
- Low = no participation

The evaluator sent 41 requests for interviews and was able to arrange 13 interviews.

ExhibitFiles Database Analysis for the Remedial Evaluation

The evaluator analyzed the ExhibitFiles database captured on November 11, 2009, with a total of 1,357 registrations. After eliminating institutional registrations for ExhibitFiles and duplicate registrations (where possible), there were 1,339 individuals included in the analysis of registered ExhibitFiles members. Data elements included ID number, date joined, name, location, email address, and numbers of case studies, reviews, favorites, and comments. We used first and last names and institutional information to identify shared membership between two groups. Since individuals used variations of their names, we matched names through manual inspection of files.

NAME Database Analysis for the Remedial Evaluation

For the remedial study, the evaluator analyzed the November 2009 membership list of NAME, a Standing Professional Committee of AAM. Information included members' names, addresses, and institutional affiliations for 803 individuals. Email addresses were not available—which meant we could not conduct an online survey of NAME members to compare to ExhibitFiles members.

Online Member Survey for the Remedial Evaluation

We conducted an online survey of all registered ExhibitFiles members to collect data to describe the demographics of the users (including work roles), identify how users found out about the site, and understand how they participated in the site and to what extent participation influenced their work. To explore professional networks, we asked respondents to identify colleagues they would consult to solve problems or get advice about exhibit and exhibition development issues. The online survey included both open- and closed-ended items. We sent an email request to take the survey to 1,339 individuals on January 21, 2010, and a reminder on February 9, 2010. The survey closed February 15, 2010. Of this total of 1,339 requests, 286 responded, for a response rate of 21.4%. Closed-ended items were analyzed using descriptive and inferential statistics. Open-ended items were coded by identifying similar responses and grouping them, using natural language of the participants.

Findings from the remedial evaluation informed the identification of issues and concerns for the summative evaluation. In addition, data from this study were used to address concerns among important stakeholding groups that had been substantially addressed by this study. Data collected during the summative evaluation study are shown in Table 2.

Table 2. Data Source Table—Data Collected during the Summative Evaluation Study

Method	Type	Number	Unit	Dates Collected	Sampling Method
In-depth Interviews	Stakeholders	8	Respondents	April 4, 2011, to August 11, 2011	Purposive
Awareness and Branding Survey (online)	Informal education practitioners listserv/group members	337	Respondents	October 14, 2011, to October 30, 2011	Population (response rate, 1.8%)
ExhibitFiles database	Registered members	2008	Records	October 2011	Population
	Case study	127	Records	October 2011	Population
	Reviews	252	Records	October 2011	Population
	Bits	70	Records	October 2011	Population
Google Analytics	Website statistics	55	Records	April 1, 2007, to November 31, 2011	All
iContact Analytics	Push email newsletter statistics	11	Records	August 24, 2010, to December 21, 2011	All

Stakeholders In-depth Interviews

Respondents for in-depth interviews to explore specific issues were purposefully selected (Miles & Huberman, 1994) based on attributes of interest. A total of eight in-depth interviews with six different respondents was conducted. The stakeholders who were interviewed represented the perspectives of the Project Team, Core Contributors, ASTC staff members, CAISE staff members, museum studies students, NAME members, and experienced exhibit practitioners. These interviews were conducted by telephone and face-to-face between April 4, 2011, and August 11, 2011. The evaluator took detailed notes and developed narrative summaries and debriefing documents.

Awareness and Branding Survey

To understand several issues and concerns about the sustainability of ExhibitFiles, the evaluator used an online survey of both members and non-members of the ExhibitFiles Site. Items requesting information about positions, museum types, and sectors in which informal learning practitioners worked were develop using categories from the ASTC Workforce Survey (ASTC, 2010). Items requesting information about museum size and budgets were developed from the same source. Items about awareness, branding, and usage were based on an online survey template (Question Pro, 2011). Other items were taken from the 2010 Online Member Survey. A copy of this survey is included in Appendix A.

As many respondents to in-depth interviews noted, the informal education field is highly fragmented. It is fragmented by institution type (e.g., types of museums and other types of organizations involved in informal learning, including practitioner type). Requests to participate were distributed through several informal education listservs and online groups that serve museum practitioners. Membership in these groups includes both individuals working in institutions and those in other sectors that are part of the museum infrastructure (e.g., consultants, commercial firms, associations, and government entities). The evaluator selected listservs and groups that were likely to have exhibit practitioners and two comparison groups: (1) museum educators; and (2) researcher/evaluators. Listservs and groups were also selected that appeared to have participants working in a range of museum types.

The aim was to get groups of sufficient size to make statistical comparisons between ExhibitFiles Members and non-members, exhibit practitioners and other informal learning practitioners, and exhibit practitioners working in different contexts (e.g., within institutions and outside institutions). Separate survey links were used so respondents could be categorized by the group where they saw the request to participate in the survey. This categorization allowed the calculation of return rates by the population total of each group. One advantage of this approach was sampling the perceptions of respondents in various roles and from various museum and informal learning institution types.

The disadvantage of this method was low overall return rate. Due to the request method (listservs and groups were selected by the evaluator for inclusion in the study) and the relative low return rates, this sample cannot be considered representative of all museum practitioners. This means that inferences can be made through statistical analysis about significant differences between groups; overall percentages from the sample as a whole, however, should not be generalized to all practitioners working in the museum field. Requests to participate in the survey were posted on 11 listservs or groups shown in Table 3.

Table 3 Awareness and Branding Survey Response Rates

Survey Link	Response	Members on October 17, 2011	Response Rate
ISEN-ASTC-L	80	1,600	5.00
Museum-Ed: Talk@Museum-Ed	68	2,127	3.20
NAME-AAM Group	65	551	11.80
VSA Listserv	49	309	15.86
AAMG_L	30	3,051	0.98
Small Museums (AASLH)	20	916	2.18
Museum Link LinkedIn	8	5,284	0.15
Committee on Audience Research and Evaluation (CARE)	5	202	2.48
Museum Education Roundtable	5	2,364	0.21
E/D Exhibit Designers	4	1,502	0.27
NSF Media & Informal Science Learning	3	819	0.37
Total	*337*	*18,725*	*1.80*

ExhibitFiles Database Records Content Analysis

Ideum, the organization that designed and hosts ExhibitFiles, provided downloads from the ExhibitFiles database in November 2009 and again in October 2011. After cleaning records and illuminating duplicates and partial entries, there were 1,357 registered members in the analysis in 2009, and 2,008 registered members in 2011. Data elements for members included ID number, date joined, name, location, email address, and numbers of case studies, reviews, favorites, and comments. The number of Bits published also was included in the 2011 member download.

In October 2011, the evaluator also received database downloads for case studies, reviews, and Bits. Data fields included all those available to authors on the site, along with the number of comments for each posting. Fields for case studies and reviews showed an increasing amount of missing information as submissions progressed over time.

Analysis of the database downloads included descriptive statistics and counts by types. Database records, after formatting and checking for accuracy, were analyzed in a statistical package and descriptive statistics were calculated.

The evaluator performed a content analysis on a subset of data to explore one issue. The text from the case studies field *Lessons learned and mistakes made (and what we did about them)* was formatted and coded in the qualitative analysis package Atlas.ti. In several instances, authors referred to other fields as covering this topic. These instances were coded as missing data; 82 of 89 case studies provided data for the content analysis. These text segments were coded inductively—that is, codes were developed by noting repeated topics from the data.

Website and Email Analytics

During the Issue Clarification Phase, the evaluator used records and statistics provided through Google Analytics and iContact (the newsletter service provider used to send periodic push emails to registered members of ExhibitFiles). The evaluator downloaded daily and monthly statistics from Google Analytics for further analysis in Excel or a statistical package (SPSS). In addition, relevant graphs were developed within Google Analytics and included in the analysis. Statistics for each newsletter were downloaded from iContact and combined with data from Google Analytics to examine the effect of push emails on visits to the sites.

Ethical Treatment of Respondents

All respondents for this study are over 18 years of age. Prior to all structured and naturalistic data collection methods, the purpose of the research was explained to both visitors and professional respondents. Levels of risks and confidentiality were described. For professional respondents involved as core users and/or members of the Project Team, the small size of the respondent pool was noted so they were aware of limited levels of anonymity based on their roles in the project. No names have been associated with quotes in reports, and in cases of stakeholders, some decisions were made to avoid using quotes because they revealed the respondent identity. For online surveys, consent was included as part of the request to participate.

Limitations

In constructivist evaluation, the evaluator has a particular responsibility to represent the viewpoints of those who may not be heard but who have a real stake in the situation. One of the limitations in this study is the lack of data and perspectives from international users of the site. Among the 2,008 registered members of the site in October 2011, 32.8% listed their place of residence as outside the U.S. Yet, only 8.0% of the Awareness and Branding Survey respondents reported living in countries other than the U.S. None of the stakeholder member in-depth interviews were conducted with non-U.S. residents. Similarly, perspectives of exhibit practitioners working in art, history, and children's museums were not fully explored.

Obtaining data from non-U.S. residents and those working in non-science museums was challenging. The evaluator engaged in three email conversations with ExhibitFiles users outside the U.S. and attended a meeting of the NAME Board. In all these instances, a major block was the evaluator being perceived as an official representative of the site rather than as someone collecting information for decision-makers.

More discussion about the target audience of ExhibitFiles and focused efforts to collect information from non-U.S. residents and exhibit practitioners working in non-science museums are needed. Understandably, the funder (NSF-ISE) and the organizational home (ASTC) of ExhibitFiles were specifically interested in the impact of the site on exhibition practice in science museums in the U.S. Yet, given the increasing globalization in all areas of endeavor and the move toward interdisciplinary approaches to science, sharing information and ideas across both national boundaries and museum types appears essential.

Most senior exhibition practitioners the evaluator interviewed stressed the role of cross-fertilization among diverse strategies and practices to spark ongoing creativity and innovation in science museums. In addition, respondents from some highly regarded science museums noted that they looked outside the U.S. for examples of innovative practice. This study can provide a solid basis upon which to move forward in exploring ways to reduce fragmentation by crossing boundaries and providing exhibition experiences that enlighten visitors to museums of all types and in all places.

Characteristics of Respondents

This section presents information about the characteristics of registered members of the ExhibitFiles database and those of two sets of in-depth interviews and two online surveys. The ExhibitFiles database includes only a limited amount of data that is useful for describing participants in a systematic way. In 2009, an online Registered Members Survey aimed to find out more about member characteristics and use of the site. In 2011, an Awareness and Branding Survey was conducted to collect information for both users and non-users of the site. In-depth interview respondents included users of the site and members of stakeholder groups.

ExhibitFiles Registered Members

Ideum provided the evaluator downloads of registered member data from the ExhibitFiles database in November 2009 as part of the remedial evaluation and in October 2011 as part of the summative evaluation. Data elements included ID number, date joined, name, location, email address, and numbers of case studies, reviews, favorites, and comments. The number of Bits published was included in the 2011 data.

Primarily, the ExhibitFiles registered members discussed in this report include 2,008 individuals who registered on this site between its April 2007 opening and a snapshot date of September 30, 2011. Appendix B includes tables showing the percentage of members by country and U.S. state. Of these members, 1,349 (67.2%) indicated residence[2] in the United States and 540 (26.9%) in one of 56 other countries. For 119 (5.9%) individuals, this information was missing. Countries with higher percentages of members included Canada (*N* = 125, 6.2%), the United Kingdom (*N* = 98, 4.9%), Australia (*N* = 45, 2.5%), and France (*N* = 20, 1.0%). Unfortunately, 42.8% of members did not provide a country of residence.

Figure 4 compares residence by month joined for all members, U.S. members, members outside the U.S., and those who provided no information on their country of residence. This analysis of residence shows that ExhibitFiles registered members have been and continue to be primarily from the U.S., but with considerable numbers of members from outside the U.S.

[2] Information about country of residence was missing or entered into another field (e.g., city) for about one-third of members. The evaluator recoded this information for analysis to provide a better understanding of membership. This pattern of missing or misplaced information provided by members is a consistent across all elements of the database underlying the ExhibitFiles website.

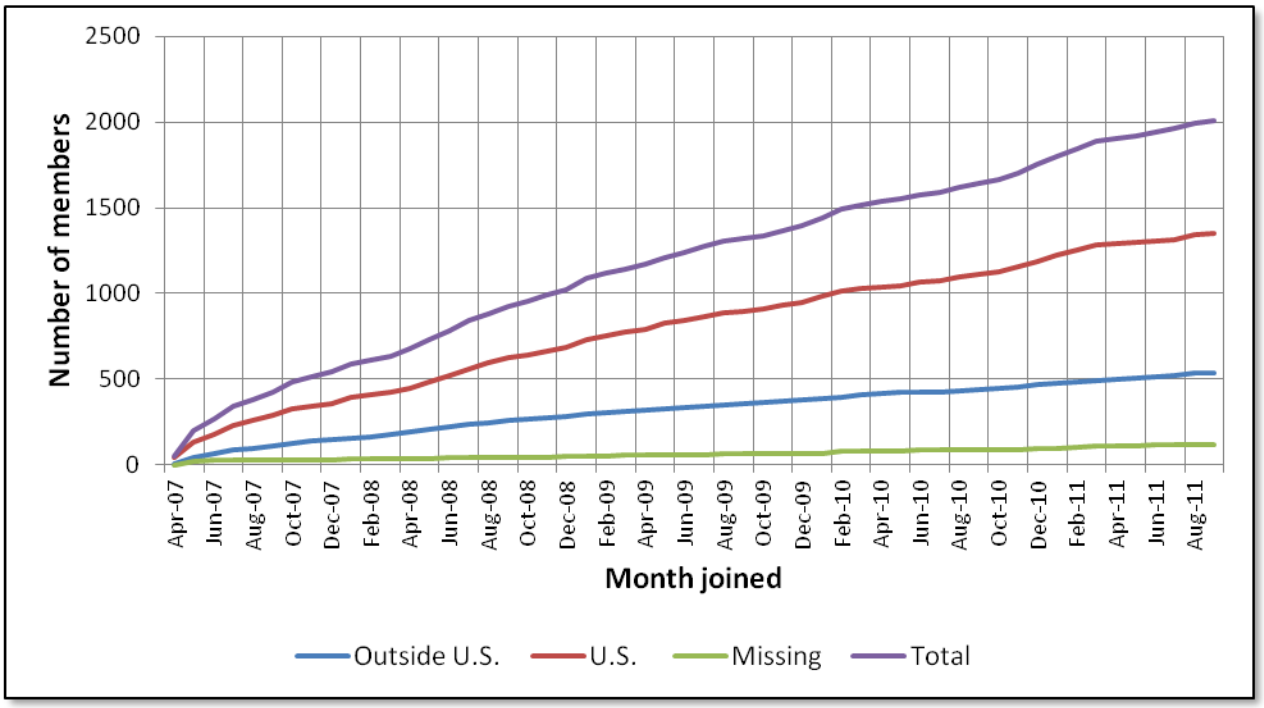

Figure 4. ExhibitFiles members (September 2011) by residence (N = 2,008).

Table 4 shows the most frequently reported cities of residence reported by ExhibitFiles members. This list shows the pattern of higher levels of members from cities in the U.S. and those with large concentrations of museums. Washington ranked first with 109 members, followed by New York with 87 members, San Francisco with 62, Boston with 50, and London with 42. Other cities outside the U.S. in this list included Toronto, Sydney, and Melbourne.

Table 4. ExhibitFiles Members' Top 25 Cities of Residence

City	Frequency	Rank
Washington	109	1
New York City	87	2
San Francisco	62	3
Boston	50	4
London	42	5
Seattle	37	6
Philadelphia	36	7
Chicago	34	8
Portland	30	9
Los Angeles	29	10
Saint Paul	27	11
Toronto	27	12
Oakland	20	13
Vancouver	19	14
Sydney	17	15
St. Louis	15	16
Brooklyn	14	17
Cambridge (MA)	14	18
Pittsburgh	12	19
Ithaca	11	20
Melbourne	11	21
Atlanta	10	22
Austin	10	23
Berkeley	10	24
San Diego	10	25

In-depth Interview Respondents

ExhibitFiles Registered Members Interviews

As part of the remedial study between December 3, 2009, and May 17, 2010, two interviewers from TC sent 41 requests for interviews and were able to arrange 13 interviews. Respondents were drawn from the ExhibitFiles database listing of registered members and were purposively selected based on their level of participation. We classified the 1,339 registered members into three groups by level of participation: (1) High = contributed at least one case study or review, commented, and used favorites; (2) Medium = no case studies or reviews but commented or used favorites more than once; and (3) Low = no participation. Of those interviewed, 2 were in the *Low* category, 4 in the *Medium* category, and 7 in the *High* category. Respondents with higher levels of participation appeared to be more willing

to be interviewed. Overall, this in-depth interview data reflected perspectives of registered members with higher levels of participation.

Stakeholders Interviews

As part of the summative study between April 4, 2011, to August 11, 2011, one interviewer from TC conducted eight in-depth interviews with six different respondents. Respondents were purposely selected to represent stakeholding groups including site developers, core contributors, senior exhibit practitioners, students, ASTC staff members, and CAISE staff members. The evaluator was not able to arrange interviews with members of other stakeholding groups, particularly registered members outside the U.S. and those working in history and art museums. To identify issues of concern for those groups, survey comments and in-depth interview data from the remedial evaluation were used. Another gap in the range of stakeholders interviewed was a representative from the funding agencies. Given some staff and organizational changes at ASTC and CAISE, the evaluator decided arranging such an interview could be perceived as interference in the relationship between the funder and these entities and additionally felt it was not appropriate to request interviews from representatives at NSF-ISE.

Online Survey Respondents

ExhibitFiles Registered Members Online Survey

As part of the remedial evaluation in January and February 2010, TC conducted an online survey of all registered ExhibitFiles members (*N* = 1,339, ExhibitFiles Database, November 2009). There were 286 respondents. The online survey sample also appears to reflect a fairly consistent number of high-level participants when compared to the database of actual registered members. Table 5 shows this comparison.

Table 5. Comparison of Percentages of Types of Participation for All Registered Members and Survey Respondents

Type of Participation	All Registered Members (*N* = 1,339, 2009) Percent	Survey Respondents (*N* = 286) Percent
Published at least one case study	6.7	10.4
Published at least one review	4.4	10.1

Awareness and Branding Survey Respondents

Data for the Awareness and Branding Survey were collected through an online survey that was open from October 14, 2011, to October 30, 2011. Given the challenges of studying a large and fragmented group of practitioners who make up the infrastructure of human expertise providing museum experiences, it was not possible to devise a method to obtain a representative sample. Data collection strategies aimed for sufficient numbers to compare awareness, use of the site, and perspectives about ExhibitFiles between exhibition practitioners and other practitioner groups. In general, the sample size (*N* = 337) and composition were appropriate for comparisons among practitioner groups. There were not, however, enough respondents from art, history, and children's museum contexts, for comparisons

among museum types. Numbers for exhibit practitioners working in non-science museums were collapsed into one category for comparison.

Practitioner Groups

The evaluator categorized respondents into four uber (large) museum practitioner groups, using survey items describing positions and sectors in which individuals worked. All respondents with positions related to exhibits were classified in the exhibit practitioner group, even if their responsibilities reflected practice in other areas, such as educational programming, evaluation, or grant development. These uber groups were used for comparison throughout the analysis of survey data. Since groups were of substantially different sizes, non-parametric inferential statistics were used. These are more conservative tests and do not require that assumptions be made about normal distribution. Figure 5 shows the percentage of large practitioner groups used for comparative analysis.

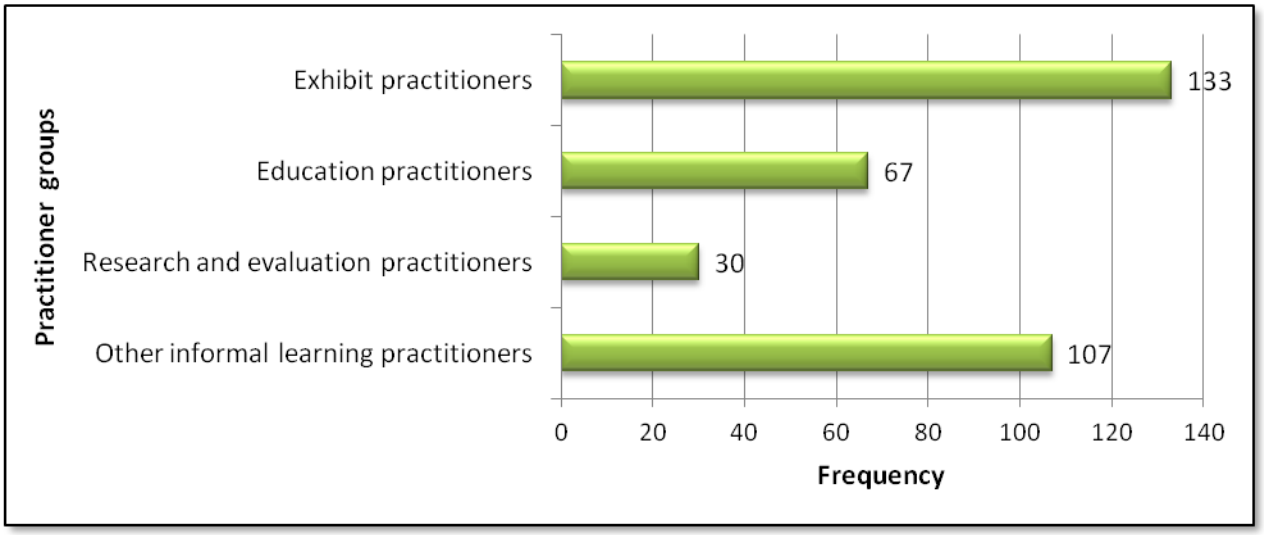

Figure 5. Uber groups of museum practitioners (N = 337, Awareness and Branding Survey).

Exhibit Practitioners Working in Different Contexts

The term *context* in this report is used to describe the type of institution in which exhibit practitioners work—that is, in museums of different types or those working outside museums, such as freelance consultants or staff in exhibit design firms. Several of the issues and concerns in the summative evaluation focused on questions about the exhibit practitioners working in different contexts. The evaluator used survey items to categorize exhibit practitioners (*N* = 133) into one of three groups, based on the context of their work. The number of respondents in each of these groups is shown in Figure 6.

Note that the first two groups (science museums and other museums) include only respondents who said they worked in museums. Given the funder organizational home (ASTC, an association of science-focused institutions) of the site, those working specifically in science museums are of particular interest. For other stakeholders, it was important to understand the extent to which ExhibitFiles served the entire community of exhibit practitioners, including those working in other types of museums.

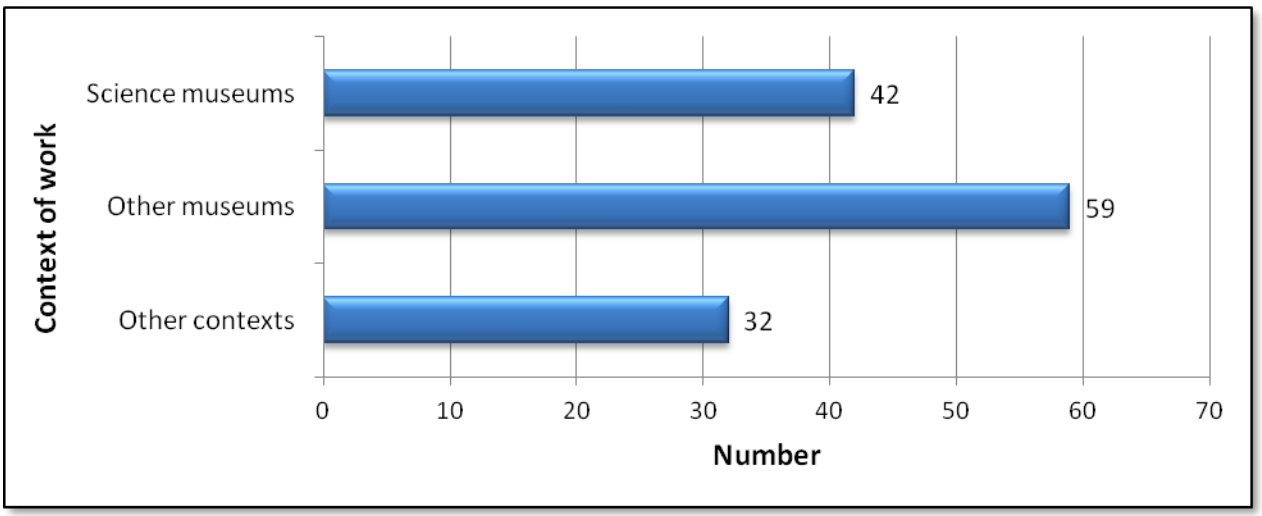

Figure 6. Exhibit practitioners' work context (N = 133, Awareness and Branding Survey).

Among the 42 respondents categorized as working in the science museum context, 81.0% reported employment in a science/technology center/museum and 19.0% reported employment in a natural history/anthropology museum. Table 6 shows this information.

Table 6. Context of Work—Types of Science Museums (Awareness and Branding Survey, *N* = 42)

Museum Type	Number	Percent
Science/technology center/Museum	34	81.0
Natural history/anthropology Museum	8	19.0
Total	42	100.0

Among the 59 categorized as working in other types of museums, almost half reported employment in history-related institutions, with 37.3% reporting employment in a history museum/historical society and 10.2% reporting working in a historic house/site. Exhibit practitioners working in art museums represent 16.9% of this group and those in children's museums only 5.1%. This information is shown in Table 7.

Table 7. Context of Work—Types of Other Museums (Awareness and Branding Survey, *N* = 59)

Museum Type	Number	Percent
History Museum/Historical Society	22	37.3
Art Museum	10	16.9
General Museum	9	15.3
Historic House/Site	6	10.2
Specialized Museum	5	8.5
Other Museum	4	6.8
Children's Museum	3	5.1
Total	59	100.0

The third group represented in Figure 6, Other Contexts, includes 32 respondents—all of whom reported working as a museum product or service provider. In the exhibit design field, this response means these respondents work as freelance designers or in exhibit design firms.

Demographics

The Awareness and Branding Survey asked respondents for information about their gender and career stage. These data indicate that females were probably more likely to respond to the survey than males. Distributions of career stage showed a majority of respondents were experienced professionals, but there were substantial numbers in other groups.

Of the total sample (*N* = 337), 17.2% (*n* = 58) reported their gender as male, 78.3% (n = 268) reported their gender as female, and 4.5% did not respond to this survey item. To some extent, this large percentage of female respondents may simply represent the preponderance of women working in the museum field. Yet looking specifically at exhibit practitioners, generally perceived as having substantial numbers of men, this pattern persists. Gender by context of work is shown in Table 8, which indicates that the survey sample may over represent female respondents compared to the actual population of exhibit practitioners.

Table 8. Gender by Work Context of Exhibit Practitioners (*N* = 127)

Gender	Science Museums	Other Museums	Other Contexts	All
Male	27.0	15.3	18.8	19.7
Female	73.0	83.1	81.3	80.3
Total	100.0	98.3	100.0	100.0

Tables 9 and 10 show the career stage distributions for exhibit practitioners working in different contexts. Chi Square tests were significant for comparisons for among practitioner groups ($p < .05$). This significance is due to higher numbers of experienced and senior professionals among Exhibit

Practitioners, particularly those working in science museums and other contexts (e.g., freelance designers and exhibit design firms).

Table 9. Career Stage by Practitioner Groups (Awareness and Branding Survey, *N* = 324)

Career Stage	Exhibit Practitioners	Education Practitioners	Research and Evaluation Practitioners	Other Informal Learning Practitioners	All Practitioners
Student	0.0	0.0	0.0	6.2	1.9
Entry-level professional	13.8	19.4	16.7	17.5	16.4
Experienced professional	54.6	70.1	63.3	53.6	58.3
Senior professional	30.0	10.4	20.0	22.7	22.8
Retired	1.5	0.0	0.0	0.0	0.6
Total	100.0	100.0	100.0	100.0	100.0

Table 10. Exhibit Practitioner Career Stage by Work Context (*N* = 130)

Career Stage	Science Museums	Other Museums	Other Contexts	All Contexts
Entry level professional	10.0	22.4	3.1	13.8
Experienced professional	62.5	50.0	53.1	54.6
Senior professional	25.0	25.9	43.8	30.0
Retired	2.5	1.7	0.0	1.5
Total	100.0	100.0	100.0	100.0

Table 11 shows the country of residence reported by respondents to the Awareness and Branding Survey. Note that 92.0% of survey respondents reported living and working in the U.S., yet about one-third of ExhibitFiles registered members are from outside the U.S. This result is due to low response rates among listservs and groups with higher levels of non-U.S. residents. This overall low percentage means data from this survey are not useful in answering questions about the perceptions of international users of ExhibitFiles.

Table 11. Residence (Awareness and Branding Survey Respondents, *N* = 337)

Country	Frequency	Percent
United States	310	92.0
Canada	8	2.4
France	3	0.9
Norway	1	0.3
Australia	2	0.6
New Zealand	1	0.3
Malta	1	0.3
Singapore	1	0.3
No response	10	3.0
Total	*337*	100.0

Clarification of Issues and Concerns

Range of Content

In the remedial study, TC found different perspectives about whether the range of content in the database was adequate. For many respondents, the range of content was excellent, and they enjoyed finding out what others were doing. Yet others wanted more art, history, and children's museum case studies. Still others wanted more case studies and reviews from museums outside the United States.

Some core contributors and other experienced professionals had concerns about whether most of the influential exhibitions from the past 50 years had been documented. They saw this documentation providing a collective memory for the field. Many others said that they used the site to keep up to date and wanted constantly updated content to stay aware of new trends in exhibition development. In the remedial evaluation, we did not do content analysis to see if these perceptions were on target or an artifact of challenges users had with finding information on the site. This section explores the following questions:

- What is the current size and range of content on ExhibitFiles?
- What is the current range of content by institution type?
- To what extent does the database include case studies and reviews of NSF-funded exhibitions?
- What is the current balance between noteworthy and historic exhibitions and current exhibitions?

Current Size and Range of Content

ExhibitFiles allows members to contribute content to the site using five templates. The add page with these options is shown in Figure 7. Post options include case study of an exhibit, case study of an exhibition, review of an exhibit, review of an exhibition, and a Bit. In reviewing downloads of postings, the evaluator noted that contributors had used the review options flexibly. In addition to reviews of exhibitions and exhibits, they had reviewed entire museums and even groups of museums in a city. Because of this intermingling of types, in this report we discuss reviews as one category of content while still keeping the exhibit and exhibition distinction for case studies.

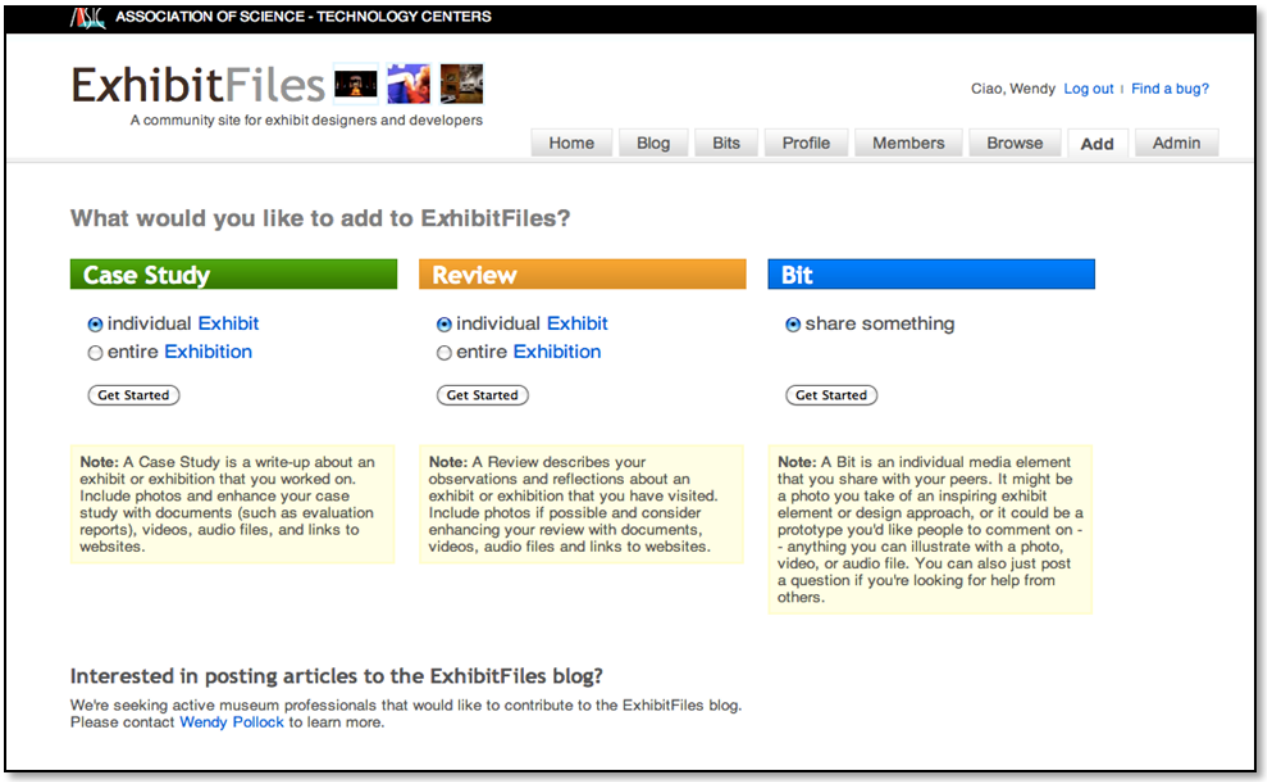

Figure 7. Posting options on ExhibitFiles in 2010.

At the end of October 2011, ExhibitFiles had 89 case studies of exhibitions, 38 case studies of exhibits, 252 reviews (exhibit, exhibitions, museums, and cities), and 70 Bits created by users and available for other members to read, mark as favorites, and comment upon. Table 12 shows this information.

Table 12. Types of Postings, October 2011 (*N* = 449)

Posting Type	Number
Case studies of exhibition	89
Case studies of exhibits	38
Reviews (exhibitions, exhibits, institutions, groups of institutions)	252
Bits	70
Total	*449*

User-created content has continued to grow steadily over the life of the website, but the type of information published has changed over time. Until January 2010, case studies were the most frequently contributed type of posting, with 92.1% of case studies (*N* = 127) added before that date. In contrast, of the total number of reviews on the site in October 2011, 38.9% (*N* = 98) were added prior by the end of January 2010 and 61.1% (*N* = 154) were added after that date. Figure 8 shows the growth of all posting over time, along with a comparison by type.

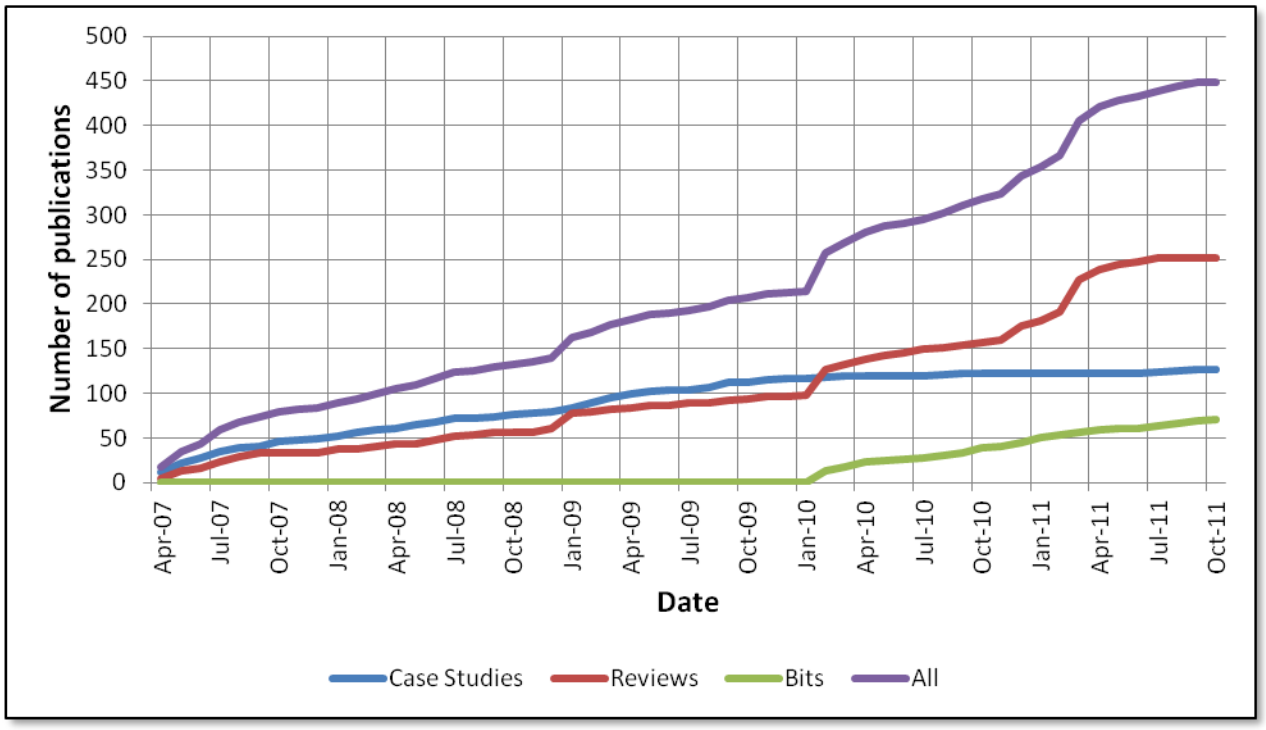

Figure 8. Types of postings by month published (N = 449).

There are several possible reasons for this change. According to discussions with the development team, this is the point at which funding for honoraria for core contributor members ran out. It may be that the lack of active solicitation of case studies by core contributors influenced this change. The PI noted, in discussions with the evaluator, that this was about the time that instructors in museum studies and museum education programs began assigning students to write and publish reviews for ExhibitFiles as part of their course work. Two of these instructors were core team members. Another reason for this shift may be that users discovered the value of using ExhibitFiles as a place to systematically capture and reflect on their own experiences in viewing the work of other exhibit practitioners.

Yet an additional, ongoing concern focused on the difficulty of developing a case study. Both the development team and the users cited challenges for one person developing a case study when a large team of professionals developed an exhibit or exhibition, as well as the difficulties of going through institutional bureaucracy to get approval for case study postings. Essentially, it is easier for an individual to decide to write and publish a review than to prepare and get approval for a case study. The most likely explanation is that all these factors influenced the decrease in the number of case studies contributed and the rise in the number of reviews published.

Current Range of Content by Institution Type

There are also some striking differences between the types of museums represented by case studies and reviews. Table 13 shows the categories of museums from which authors could choose to categorize the institutional focus of their case study or review. Using these categories, the highest percentage of specific museum type represented by case studies was science at 46.5% (*N* = 127). Yet the highest percentage of reviews focused on art museums, at 30.0%. As development team members and

registered users explained in in-depth interviews, exhibit design and development is an area of practice that benefits from multidisciplinary approaches and adaptations. It appears as if individuals who had documented their own work in science museums look outside this area for ideas and best practices.

Table 13. Case Studies and Reviews by Specific Museum Type

Specific Museum Type	Case Studies (*N* = 127)	Reviews (*N* = 253)
Art	3.9	30.0
Children's	2.4	4.0
Corporate	0.8	0.8
Culture	5.5	6.7
History	9.4	13.0
Library	2.4	1.2
Arboretum	0.8	0.4
Nature Center/Park	1.6	1.2
Planetarium	0.8	0.0
Anthropology	6.3	0.8
Science	46.5	20.2
Aquarium	3.1	0.4
Zoo	0.8	2.0
Botanical Garden	2.4	0.8
Natural History	7.1	11.1
Other	6.3	7.5

Table 14 shows all the science-related institutional types added together. When this is done, science-related institutions comprise the highest percentage of both case studies (69.3%, *N* = 127) and reviews (36.8%, *N* = 253) on the site. This pattern tends to support some registered users' concerns about a lack of balance in the site's content, with a heavier concentration of science-focused content than that for other areas.

Table 14. Case Studies and Reviews by Uber Museum Types

Uber Museum Type	Case Studies (*N* = 127)	Reviews (*N* = 252)
Other	6.3	7.5
Corporate	0.8	0.8
Children's	2.4	4.0
Library	2.4	1.2
Art	3.9	30.0
Culture	5.5	6.7
History	9.4	13.0
Science	69.3	36.8

Estimated Cost

In contrast, case studies on the site represent a wide range of exhibition development budgets. The highest frequency category represented among case studies is Less than $100,000, at 21.3% (*N* = 89). Other categories that authors of case studies could choose from were $100,000 to $500,000; $500,000 to $1,000,000; $1,000,000 to $3,000,000; and Over $3,000,000. Each of these categories is represented by percentages ranging from about 13% to 17% of the total. In a pattern found across the ExhibitFiles database, however, about 17% of the authors did not include this information in their case study. Figure 9 shows the distribution of exhibitions by cost range.

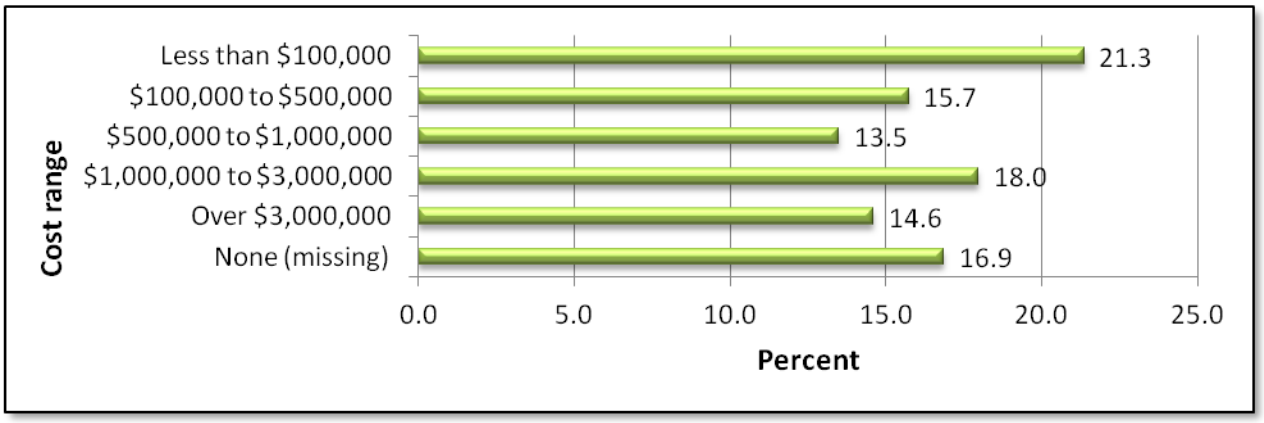

Figure 9. Case studies—estimated cost of exhibitions (ExhibitFiles Database, N = 89).

The collection of case studies also includes case studies for wide ranges of exhibition sizes. The largest percentage of case studies documents exhibitions from 1,000 to 3,000 sq. ft. (28.1%, *N* = 89). Other categories from which authors could select included Less than 1,000 sq. ft.; 3,000 to 5,000 sq. ft; 5,000 to 10,000 sq. ft.; and Over 10,000 sq. ft. These categories represent between 11% to 12% of case studies. Figure 10 shows the distribution of exhibition case studies by ranges of size.

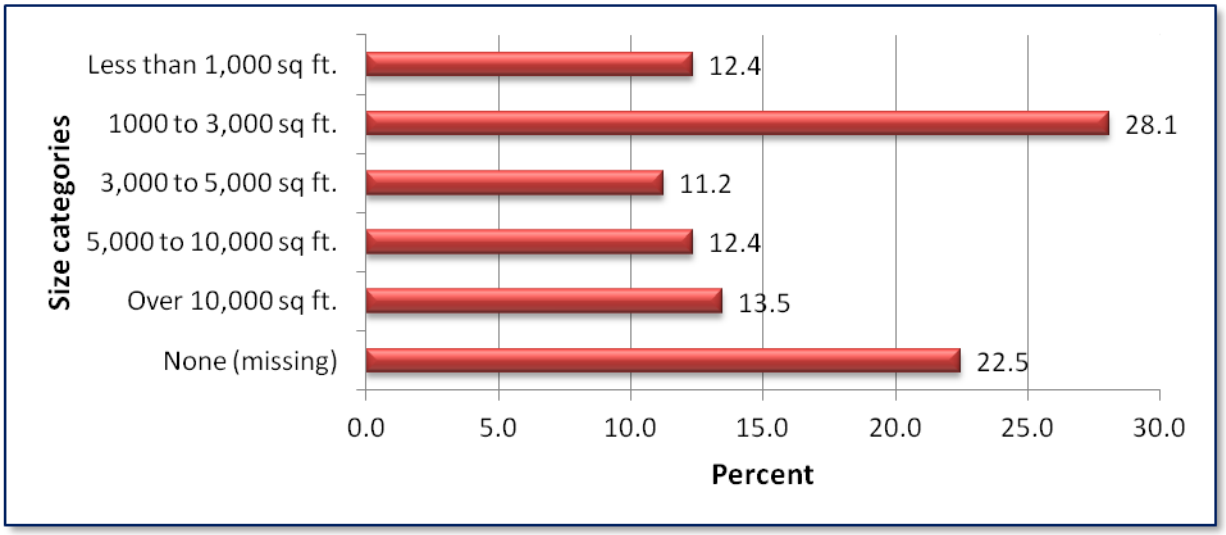

Figure 10. Case studies—size of exhibitions (ExhibitFiles Database, N = 89).

Case Studies and Reviews of NSF-funded Exhibitions

One original aim of the project was to document the development of exhibitions funded by the NSF-ISE program. Of the total 89 exhibition case studies, 25 of these exhibitions were funded by NSF-ISE. These exhibitions opened between the years 1974 and 2008. The list of NSF-funded exhibitions is shown in Table 15.

Table 15. Case Studies of NSF-funded Exhibitions by Year

Exhibition Name	Museum Organization	Year Opened
The Discovery Room	Museum of Natural History, Smithsonian Institution	1974
Looking at the Light	Exploratorium, ASTC	1981
Darkened Waters: Profile of an Oil Spill	Pratt Museum	1991
Psychology Exhibition	American Psychological Association and Ontario Science Centre	1991
Greenhouse Earth	Association of Science-Technology Centers (ASTC) and Franklin Institute	1992
Hunters of the Sky	Science Museum of Minnesota	1994
Animal Eyes	Museum of Vision	1998
Memory	Exploratorium	1998
Secrets of Aging	Museum of Science	2000
Invention at Play	National Museum of American History, Smithsonian Institution	2002
It's a Nano World	Sciencenter, Ithaca (NY)	2003
Making Models	Museum of Science, Boston	2003
Science Buzz	Science Museum of Minnesota	2003
nanoZone	Lawrence Hall of Science	2004
Flip It, Fold It, Figure It Out! Playing with Math	Museum of Life and Science	2005
Lookout Cove Outdoor Exhibit	Bay Area Discovery Museum (BADM)	2005
Plants Are Up To Something	The Huntington Library, Art Collections, and Botanical Gardens	2005
Star Wars: Where Science Meets Imagination	Museum of Science, Boston	2005
BioQuest Woods	Museum of Life and Science	2007
Mind	Exploratorium	2007
Skyline	Chicago Children's Museum	2007
Skyscraper! Achievement and Impact	Liberty Science Center	2007
Water: H_2O = Life	American Museum of Natural History and Science Museum of Minnesota	2007
Wild Music: Sounds & Songs of Life	Science Museum of Minnesota	2007
Travels in the Great Tree of Life	Yale Peabody Museum of Natural History	2008

In addition, 4 of the 38 exhibit components documented in case studies were funded by NSF. These represent experiences that opened between 1998 and 2009. Table 16 shows a list of these exhibits.

Table 16. NSF-funded Exhibit Case Studies

Exhibit Name	Organization	Year Opened
Jukebox Memories	Exploratorium	1998
Be Here Now	Exploratorium	2007
Pictures of Sound	Science Museum of Minnesota	2007
Vertical Wind Tubes: An Introduction to Transactivity	Thanksgiving Point Institute	2009

Finally, of the 252 reviews, 8 of the exhibit components or exhibitions were NSF-funded. Table 17 shows a list of these reviews.

Table 17. Reviews of NSF-funded Exhibitions[3]

Name of Item Reviewed	Museum Organization
Geometry Playground	Exploratorium
Goose Bumps: The Science of Fear	California Science Center
Invention At Play	National American History Museum
Mind	Exploratorium
Race: Are We So Different?	American Anthropological Association
Skyscraper! Achievement and Impact	Liberty Science Center
Where do you sit in the cafeteria?	Science Museum of Minnesota
Wonder Years: The Science of Early Childhood Development	Science Museum of Minnesota

[3] Since reviewers would not necessarily have the information, review add *form* (e.g. fields provided for posters to add information to the site) does not ask for information about funding. Some reviewers and the PI tagged some NSF-funded exhibits and exhibitions that were reviewed. There may be some others on the site.

An analysis of the case study database also shows other funding sources for exhibition development. The most frequent funding sources in the database, after NSF-ISE, include foundations at 14.6% (*N* = 89), followed by corporations at 12.4%, U.S. federal agencies (Institute of Museum and Library Services, National Oceanic and Atmospheric Administration, NASA, and the Small Business Administration) at 9.0%, and local and state government at 5.6%. Funding sources represented by less than 5% of the case studies are federal agencies outside the U.S., associations, museums, private donors, universities, sponsorships, unions, and the United Nations Educational, Scientific and Cultural Organization (UNESCO). Table 18 shows percentages of categories of funding sources other than NSF-ISE.

Table 18. Other Funding Sources Listed in Case Studies (ExhibitFiles Database, *N* = 89)

Other Funding Sources	Number	Percent of Cases
Foundations	13	14.6
Corporations	11	12.4
Federal U.S. agencies (other than NSF)	8	9.0
Local and state government	5	5.6
Federal agencies outside U.S.	4	4.5
Associations	3	3.4
Museums	3	3.4
Private donors/capital campaigns	3	3.4
Universities	2	2.2
Sponsorship	1	1.1
Union	1	1.1
UNESCO	1	1.1

Balance between Noteworthy Influential Exhibitions and Current Exhibitions

Other aims of the project were to document the development of noteworthy and influential exhibitions, as well as providing updates about current exhibits and exhibitions. One way to estimate the progress toward this goal is to look at the distribution of exhibition case studies by the year the exhibition opened.

Figure 11 shows this distribution. While opening dates range from 1939 to 2011, higher frequencies occur around the first three years of the ExhibitFiles project (2006–2009) and then drop sharply after this time period. These high-frequency years represent the time frame associated with the early life of the project, when the development team and was devoting considerable time actively soliciting contributions and when stipends were available for the core contributors. It appears this level of time and financial support may be necessary to maintain higher levels of case study contribution. Another factor reducing the number of exhibition openings may have been the recession beginning in 2007.

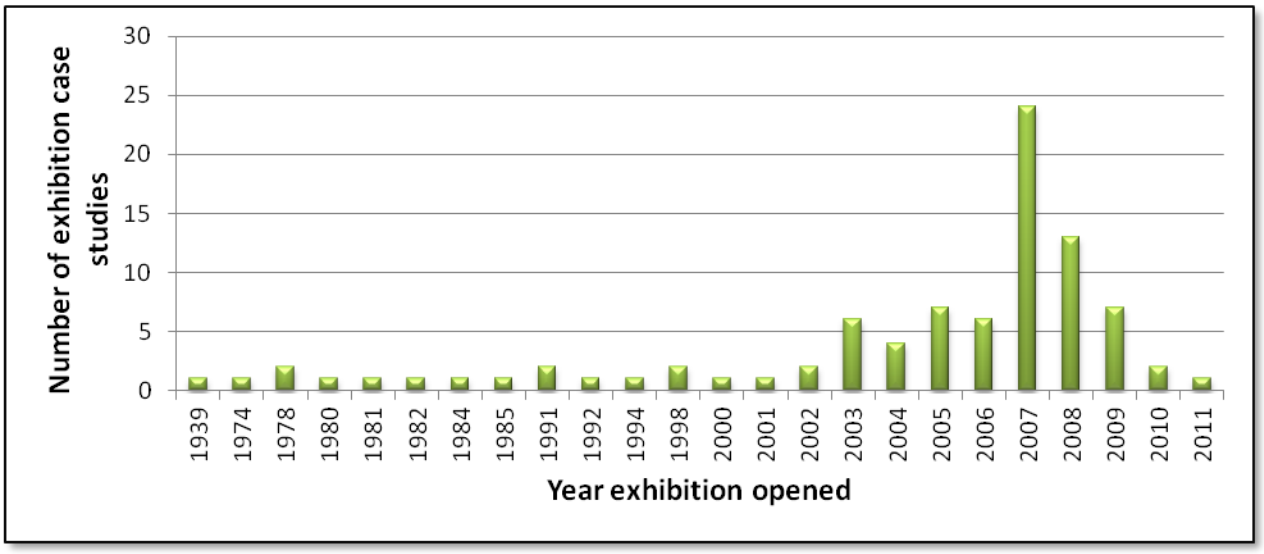

Figure 11. Distribution of exhibition case studies by year the exhibition opened (ExhibitFiles Database, N = 89).

The collection of case studies does contain a number of historic and influential exhibitions, including the Art in the Original Buhl Planetarium in Pittsburgh, which opened in 1939; The Discovery Room at the Smithsonian's Museum of Natural History, which opened in 1974; and Darkened Waters: Profile of an Oil Spill, which opened in 1991. Several of the exhibitions listed in Table 19 represent influential exhibitions for which information may be available only in ExhibitFiles.

Table 19. Case Studies for Exhibitions That Opened Prior to the Opening of ExhibitFiles (ExhibitFiles Database)

Exhibition Name	Museum Organization (developer)	Year Opened
Art in Original Buhl Planetarium and Institute of Popular Science, Pittsburgh	Buhl Planetarium and Institute of Popular Science Pittsburgh	1939
The Discovery Room	Museum of Natural History, Smithsonian Institution	1974
Art by Computer	Lawrence Hall of Science	1978
CB Radio	Association of Science-Technology Centers (ASTC)	1978
Eureka!	ASTC	1980
Looking at the Light	Exploratorium, ASTC	1981
United States Exhibition	Ramirez & Woods	1982
Chips & Changes	ASTC	1984
Vision: The Precious Treasure	ASTC	1985
Darkened Waters: Profile of an Oil Spill	Pratt Museum	1991
Psychology Exhibition	American Psychological Association and Ontario Science Centre	1991
Greenhouse Earth	ASTC and Franklin Institute	1992
Hunters of the Sky	Science Museum of Minnesota	1994
Animal Eyes	Museum of Vision	1998
Memory	Exploratorium	1998
Secrets of Aging	Museum of Science	2000
Volkswagen's Autostadt	Volkswagen AG	2001
Enginuity	Ironbridge Gorge Museum Trust	2002
Invention at Play	National Museum of American History, Smithsonian Institution	2002
Amazing Feats of Aging	Oregon Museum of Science and Industry	2003
It's a Nano World	Sciencenter, Ithaca (NY)	2003
Making Models	Museum of Science, Boston	2003
Rookery Bay Environmental Learning Center	The Rookery Bay National Estuarine Research Reserve	2003
Science Buzz	Science Museum of Minnesota	2003
The Bering Sea: Abundance and Change	Alaska SeaLife Center	2003

On the other hand, only three of the noteworthy exhibitions documented in McLean and McEver's 2004 book *Are We There Yet? Conversations about Best Practices in Science Exhibition Development* are included in ExhibitFiles. This book was one of the inspirations and starting points for the ExhibitFiles project. Table 20 shows a list of these exhibitions.

Table 20. Noteworthy Exhibitions from McLean and McEver (2004)

Noteworthy Exhibition	Organization(s)	ExhibitFiles Case Study	ExhibitFiles Review
Wolves and Humans: Coexistence, Competition and Conflict	Science Museum of Minnesota	No	No
Traveling the Pacific	The Field Museum	No	No
Psychology: Understanding Ourselves, Understanding Each Other	American Psychological Association and Ontario Science Centre	Yes	No
Darkened Waters: Profile of an Oil Spill	Pratt Museum, Michael S. O'Meara	Yes	No
Whodunit? The Science of Solving Crime	Fort Worth Museum of Science and History	No	No
Engineer It!	Oregon Museum of Science and Industry	No	No
Memory	Exploratorium	Yes	No
Congo Gorilla Forest	Wildlife Conservation Society, Bronx Zoo	No	No
Frogs	Exploratorium	No	No
Sounds from the Vaults	The Field Museum	No	No
Sound Lab	Experience Music Project	No	No
Jellies: Living Art	Monterey Bay Aquarium	No	No

In summary, this analysis of ExhibitFiles content confirms the perception that content is primarily focused on informal science education. Yet the collection of reviews indicates that exhibit practitioners may explore examples of exhibitions outside their own area of focus for ideas and inspiration. The collection of case studies as of 2011 appears to contain examples of a wide range of budgets and sizes. Of the total 89 exhibition case studies, 25 of these exhibitions were funded by the NSF-ISE program. There are 4 case studies of NSF-funded exhibit components and 8 reviews of components or exhibitions funded by NSF. While NSF-ISE is, not surprisingly, the exhibition funder with the highest number of case studies on ExhibitFiles, the database also contains exhibitions funded by foundations, other U.S. federal agencies, corporations, and local and state government. Users looking for case studies of current exhibitions may be disappointed in finding many examples of case studies of exhibitions that opened in 2006 and 2009 but far fewer before and after those years. Several historical and influential exhibitions have been documented through case studies, but, based on an analysis of the noteworthy exhibitions cited by McLean and McEver in 2004, several important gaps in the collection remain.

Quality of Content

Concerns heard in stakeholder interviews, particularly among senior-level professionals, focused on the quality of some aspects of case studies. Some respondents observed that authors appeared to be unwilling to admit mistakes and reflect on what went wrong. Some users in both online surveys noted a self-congratulatory tone to some case studies and observed that authors focused only on what had gone well.

To clarify this concern, the evaluator focused on one area, the *Lessons learned and mistakes made (and what we did about them)* section of exhibition case studies. The following questions were addressed in this analysis.

- Did authors of case studies reflect on lessons learned and mistakes made in exhibition case studies?
- What was the tone of discussed lessons learned and mistakes made?
- What are the topics of their reflections?
- Are some topics discussed more frequently than others?

The evaluator found that in 74 of the 89 (83.2%) exhibition case studies, the author had included some discussion of lessons learned and mistakes made. The length and depth of these presentations varied greatly. A few were only one or two sentences long, showing a minimal level of reflection; others were 1,000 to 1,500 words long. Most fell between these two extremes. Readers should note that multiple lessons learned were coded for each case that provided text in this field. In addition, some lessons were coded in more than one category. Numbers provided in this section are intended to provide a picture of the overall size of trends and themes in the database. Only one individual coded text, and this picture is an interpretation of the themes from one point of view, not a definitive quantitative analysis.

Statements in the *Lessons learned and mistakes made* section of the case studies generally were framed in one of three ways: (1) as a mistake—something that definitely had poor results; (2) as advice to others—a statement about what the author perceived would work, based on an unstated mistake; or (3) as a lesson about something that worked well. The evaluator identified 58 statements clearly framed as mistakes—about half of the 89 case studies. So while a substantial number of authors clearly framed at least some of their ideas about lessons learned as mistakes, about an equal number either identified no lessons learned or preferred to present the lessons learned about something that went well.

Figure 12. Case studies—lessons learned and mistakes made categories (ExhibitFiles Database, N = 89).

The two most frequent topics discussed in the *Lessons learned and mistakes made* section of the exhibition case studies were (1) design strategies; and (2) formats and tactics. The design strategy category included statements about overarching approaches to the development of the exhibitions, such as a focus on aesthetics, organizing the exhibition around a storyline or big idea, and universal design. Typical statements about lessons learned in the design strategies category included the following:

> *We tried to engage as many senses as possible in all of the modeling activities, and we focused on delivering information through multiple modes of communication (audio, text, and images). The technical designers also came up with some clever mechanisms for increasing the physical accessibility of the exhibition (Reich, 2007).*
>
> *Making the familiar strange and the strange familiar: The giant zipper was the star of this show. It was big, wooden, simple—it showed something familiar in an unfamiliar light. This principle is not only at the heart of inquiry, it also informs some of the best exhibits (Pollock, 2007C).*
>
> *We also found that if we establish a storyline earlier on, we can have more fun with it and there are more possibilities for expressing it in different media (Foulger, 2007).*

The tactics and formats category included statements about lessons learned, focusing on specific formats such as games, kiosks, and interactives. Also included were statements about approaches to specific aspects of exhibitions (i.e., tactics), such as sound, lighting, and flow through space. Typical statements in this category included these:

> *There are downsides to developing multi-user exhibits. It makes the development process harder because you can't conduct even preliminary testing by yourself. You need at least two visitors to try the exhibit, and it can be awkward for a developer to play one role if the topic is personal. The instructions also tend to be more complex, and more in need of careful crafting, as at least one visitor needs to follow them well to make the experience work (Thogensen, E. 2008).*

> *Modeling skills: Engaging visitors in activities that reflected the above described modeling skills was not an easy task. Some techniques used included applying role play scenarios to the activity design (Imagine you are a fish farmer...), mystery games where visitors guessed what an unidentified model represented, and juxtaposing multiple models of the same thing next to one another (Reich, 2007).*

Fewer but still substantial numbers of authors discussed lessons learned about communication. Statements in this category included those focusing on communication among team members, staff members in the institution outside the team, clients, consultants, and advisors. There were indications that communication was one of the most challenging aspects exhibit developers faced:

> *[Working with outside consultants] also meant that we had to commit to a more open development and design process than we generally had, and that caused friction throughout the process. The kind of informal back and forth you can have with people in the same office, is impossible to have with outside consultants, no matter how dedicated (Rodley, E., 2008).*

> *Due to time constraints we didn't have enough direct contact between the curator and some of the consultants, which led to content issues and some remakes. Next time I would have more meetings with all the consultants and the curator rather than me acting as a go-between (Pickering, 2008).*

> *As with any project that has many players, communication is key. An item that was misinterpreted was the finish of the panel sides facing away from users (but partially visible to people walking around the public park surrounding the museum). In early meetings, project members agreed (we thought!) that the backs of the panels should blend in with the surrounding architecture. . . . Once the exhibit panels were installed, it became clear that the museum staff's interpretation of "matching" was different than ours. . . . I wish we could have better understood the museum's initial "vision" (Orselli, 2007).*

Yet a few others noted the effectiveness of collaboration:

> *The most enduring lesson I learned from this experience was about the generative nature of collaboration. When people commit to trusting each other and truly working together on something, anything is possible (McLean, 2008).*

Statements about lessons learned about managing resources were defined as those focusing on time and budget. Statements about time included the following:

> *We learned that it is, indeed, possible to do a project like this in a short period of time and still end up with a compelling experience for visitors. We also learned that the extreme deadlines provided the permissive atmosphere to experiment without worry—after all, who could possibly criticize your work under such circumstances? (Well, actually, I led a critique afterwards, and we all agreed that most of the issues, problems, and shortcomings were a result of not being able to reflect upon or iterate the designs and ideas.) I was reminded once again that the "sweet spot" in exhibit development and design lies between the extremes between "just doing it" and planning it to death (McLean, 2007).*

> *One of the most important lessons learned from this project is that considerable development and design time are necessary to scale down a larger exhibition. This is especially true when the new exhibition is being created for different audiences and different venues (Pattison, 2009).*

Statements about budget included:

> *The hardest thing to do is work within your budget, when you have an exciting design it's easy to be overly optimistic about what you can achieve (Jackson, W., 2008).*

> *Leave money for changes. No one does it right the first time (Redmond-Jones, 2007).*

At the next level of frequency discussed in the *Lessons learned and mistakes made* section of the exhibition case studies are statements about installation and maintenance. Lessons learned about installing focused on both the expertise and time requirements:

> *Some exhibitions need a skilled technician to help with set-up and staff orientation (Pollock, 2007B).*

> *It was a challenging work environment and I would have scheduled 2 weeks total of exhibit install instead of one. I believe the stainless steel will hold up quite well and am anxious to see how the floor guard graphic laminate works over time (Wodarcyk, 2007).*

Lessons learned about maintenance often focused on durability:

> *Some of the interactive science modules suffered greatly at the hands of over-enthusiastic children and adults so construction and coating materials need to be re-thought (Davies, 2008).*

> *On a more positive note, the use of an all weather ground covering called "FIELDturf" for the central exhibit area (which was originally hard-packed dirt) was excellent. It looks and feels like real grass and is self-draining. It was concluded by museum staff (rightly so) that "real" grass would not hold up to the volume of visitors expected to use the small enclosed area (Orselli, 2007).*

About 10.0% of the case studies included statements about lessons learned in working with digital technology, both hardware and software:

> *Reconfiguring scientific software for a visitor-friendly computer interactive is not as easy as we imagined. We, and the software developers, underestimated the flexibility of technology developed specifically for scientists to interpret Crittercam data. In the future, without time for extensive prototyping, we'd stick to known quantities and technologies. After our first weekend, we found that a number of elements were not as visitor-proof as we had hoped (Guarinello, 2007).*

> *We had to rule out any high-tech or computer-based components that would be difficult for small museums to maintain and repair. This eliminated over half the components of EOE and necessitated substantial time for the development of new, low-tech exhibit activities (Pattison, 2009).*

Finally, about 10.0% of the cases included lessons learned about the attitudes required for successful exhibition design and the satisfaction exhibit practitioners took from their work:

> *There were a number of elements in the exhibit that were risks, and which paid off. For instance, a series of large graphics on the walls are intended to scaffold adult visitors by mirroring the conversations they may be having with their children, and by modeling interactions. These "exemplars" make use of photographs of real visitors in the exhibit, and quotes in English and Spanish. It was complicated to create these—the timing was critical and getting the tone just right was very tough. They have turned out to be incredibly effective. They allow the museum to offer help without lecturing or being didactic, they literally reflect the museum community, and they make good use of peer-to-peer learning (Roberts, 2010).*

> *Many of the personnel who worked on this exhibition reminisced about its importance to our institution, its impact on the communities it reached, and our personal pride and love for this exhibition. For some of us, it remains the finest project and the best team with which we've had the good fortune to work (Binning, 2009).*

> *I occasionally get accused of having too much fun. The exhibitions team does have a lot of fun. It is also a lot of work, and the team often goes home absolutely drained. But we all eagerly return, because we get to make a difference, nearly every single day. Wow! (Stroud, 2010).*

In general, we found that in the collection of case studies as a whole, there were a rich set of lessons learned and deep reflections on best practice. While there was a tendency to frame mistakes as a lesson rather than simply as a mistake, there were substantial instances where authors explicated noted mistakes, improvements after mistakes were recognized, and the impact of the lessons and mistakes on their exhibition work after the experience described in the case study.

Yet the process of analyzing and synthesizing across individual cases provided information that would not be accessible for an ExhibitFiles user reading individual studies over time. These findings point to the value that could be added to the site, for both professional development and project development, if some ongoing mechanism were added to promote, facilitate, and encourage synthesis.

At the same time, we identified a great deal of inconsistency among case studies, with some authors simply ignoring the lessons learned section and others providing cursory input. There are also indications that case studies based on less reflection and showing less authentic analysis of the process may provide the basis for some of the negative content-related comments on the Awareness and Branding Survey. The negative comments about content quality point to potential benefits if greater levels of guidance (e.g., tutorials and how-to FAQs) and feedback to authors before they post.[4] Despite the potential benefits of greater guidance and review of postings, this effort would require additional human resources in developing content for and managing the site.

Levels of Awareness and Use

While the total number of exhibit practitioners in the U.S. or around the world is not known, the project team assumed that members of NAME constituted a primary target audience of ExhibitFiles. In the Remedial Study, the evaluator explored overlapping membership. Using the February 2009 NAME membership list *(N* = 830), we found that only 14.7% *(n* = 122) of individuals on the NAME membership list also appeared on the ExhibitFiles database (November 2009). In addition, 9.1% (*n* = 122) of ExhibitFiles registered members also appeared on the NAME membership list. Based on these comparisons, it appeared that ExhibitFiles had room for growth among NAME members.

These relatively low levels of overlapping memberships raised a question as to whether NAME members had simply chosen not to participate or if they were not aware of the site. This questioning also highlighted a potential role of the website in drawing exhibit practitioners into a more connected and coherent group across museums of all types. In the Awareness and Branding Survey, we explored these questions.

- To what extent are NAME members aware of ExhibitFiles?
- To what extent has awareness of the site penetrated the population of exhibit practitioners as a whole?
- Is there greater awareness of ExhibitFiles among exhibit practitioners working in science museums than in other areas?
- To what extent does awareness translate into visiting and using the site?
- How does the ExhibitFiles compare to other NSF-funded sites and those included in the Informal Commons project?

Figure 13 shows a comparison of awareness among respondents from groups and listservs. (Only groups with similar numbers of respondents to NAME are shown.) Among respondents from the NAME listserv, 83.1% (*N* = 65) reported being aware of ExhibitFiles, with a similar high percentage of ISEN respondents 81.3% (*N* = 80) reporting awareness. Awareness was somewhat lower among VSA listserv respondents, at 59.2% (*N* = 49). Among Talk@Museum-Ed respondents, only 27.9% (N =49) reported awareness of the site.

[4] Guidelines for postings were distributed at conferences and feedback was provided by the project team. Strategies and methods to provide additional feedback would need to be tested to see if there are ways that would make more authors focus on the quality of postings.

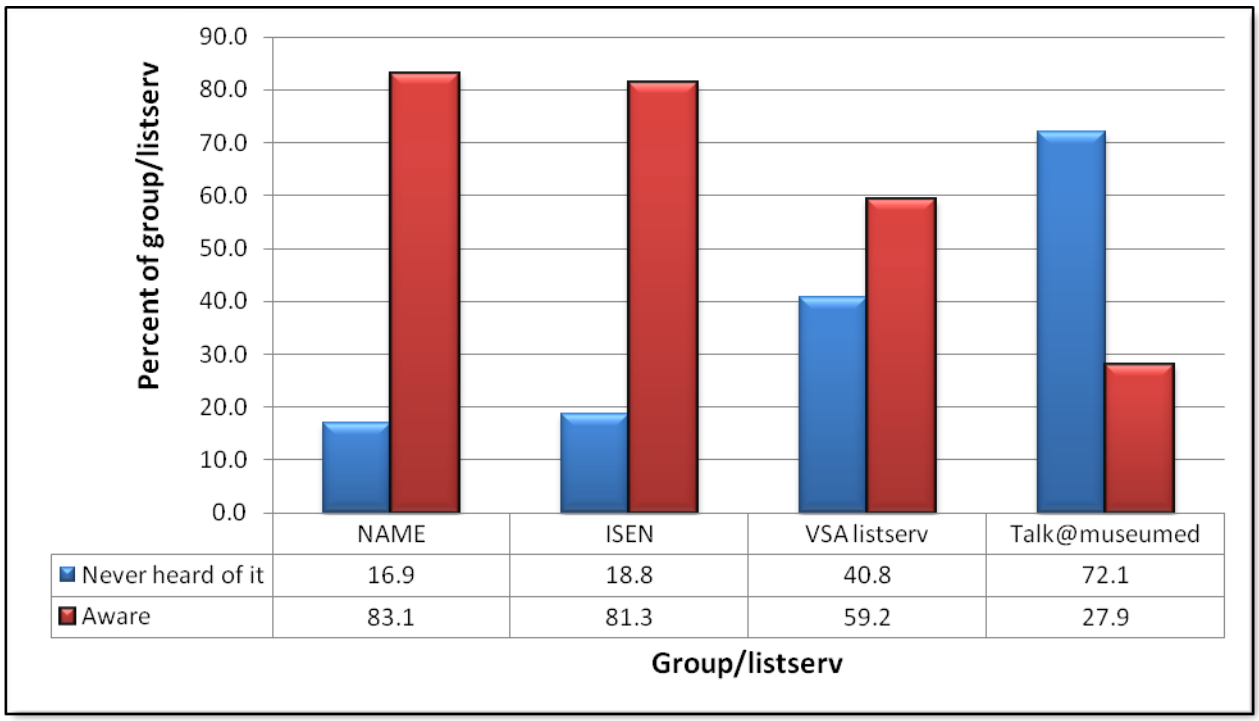

Figure 13. Comparison of awareness among groups and listservs (Awareness and Branding Survey).

Figure 14 compares the percentages of awareness among the five practitioner groups; total group size upon which graph percentages are based are included after group percentages. Readers should note that while this graph shows percentages, the practitioner groups contrasted in size. Among the total sample, 55.8% (*N* = 337) of the respondents reported they were aware of ExhibitFiles. Awareness appeared highest among research and evaluation practitioners at 76.7% (*N* = 30), followed by exhibit practitioners at 63.2% (*N* = 133). Awareness was lowest among education practitioners at 38.8% (*N* = 67). A slight majority (51.4%, *N* = 107) of all other informal learning practitioners reported they were aware of the site.

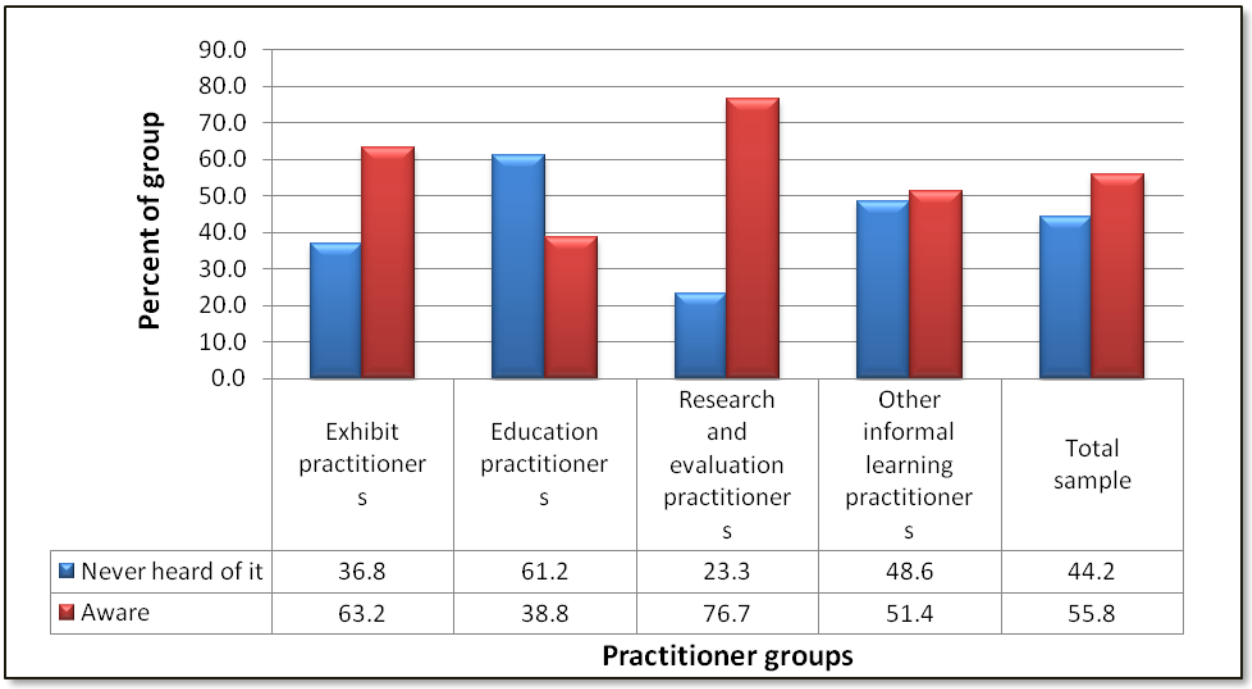

Figure 14. Awareness of ExhibitFiles by practitioner groups (Awareness and Branding Survey, N = 377).

Figure 15 shows a comparison of levels of awareness to use by context of work. Among the total sample of exhibit practitioners from the Awareness and Branding Survey (*N* = 133), 63.2% (*N* = 42) reported being aware of the site. Awareness appeared highest among those working in science museums at 90.5% (*N* = 59) and in other sectors 87.5% (*N* = 32). In contrast, only 30.5% of museum practitioners working in other museum types were aware of ExhibitFiles.

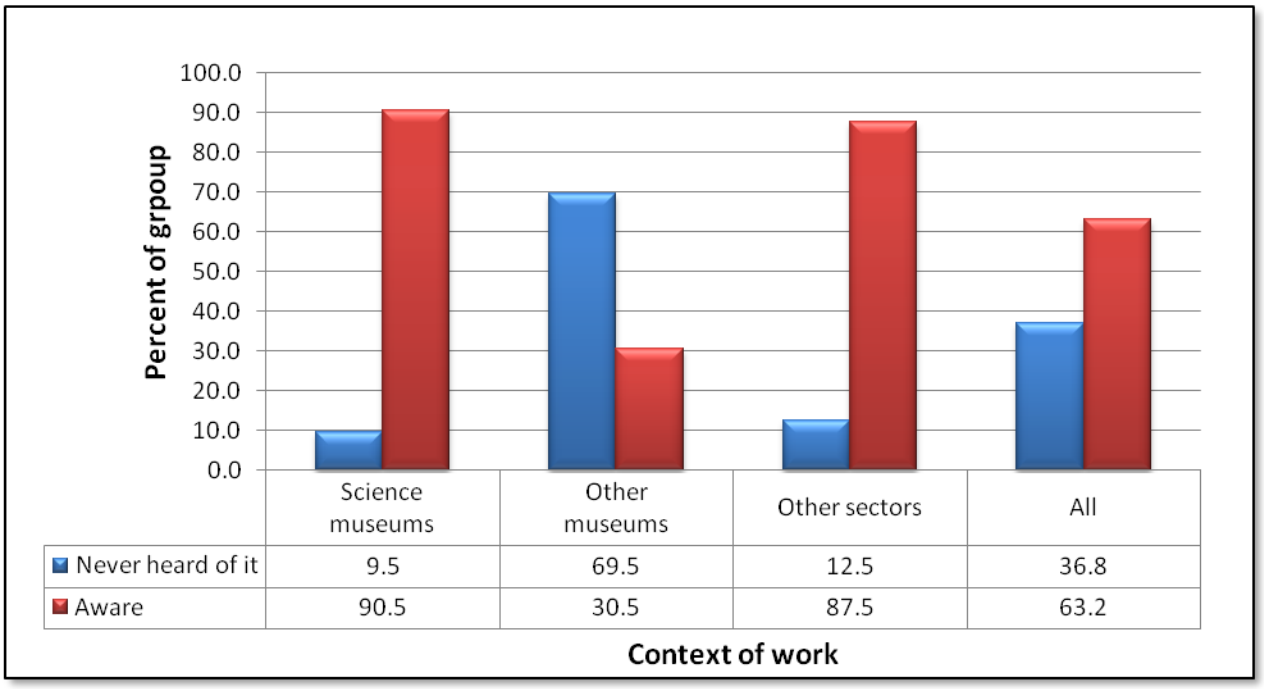

Figure 15. Exhibit practitioner awareness of ExhibitFiles by context of work (Awareness and Branding Survey , N = 133).

Of course, awareness of the site is not the entire story. Awareness is important only as a forerunner to actual use. The Awareness and Branding Survey asked respondents to characterize their awareness and use of ExhibitFiles by selecting one of four options: *Never heard of it, Aware but never used, Use it only sometimes*, or *Use it on a regular basis*.

Figure 16 shows a comparison of the levels of awareness to use among respondents from listservs and groups. (Only groups with similar numbers of respondents to NAME are shown.) Not surprisingly, among the four listserv/groups selected for comparison, the NAME listserv respondents (*N* = 65) showed the highest overall level of awareness translating into use of the site. While somewhat lower, the ISEN listserv respondents (*N* = 49) also showed higher levels of awareness translating into use. Fairly high numbers of the VSA listserv respondents were not aware of the site (40.5%), but a fairly high percentage (28.6%) had visited the site and used it sometimes. In contrast, the listserv/group aimed at museum educators across museum types, Talk@Museum-Ed (*N* = 49), showed the lowest levels and use among these four groups.

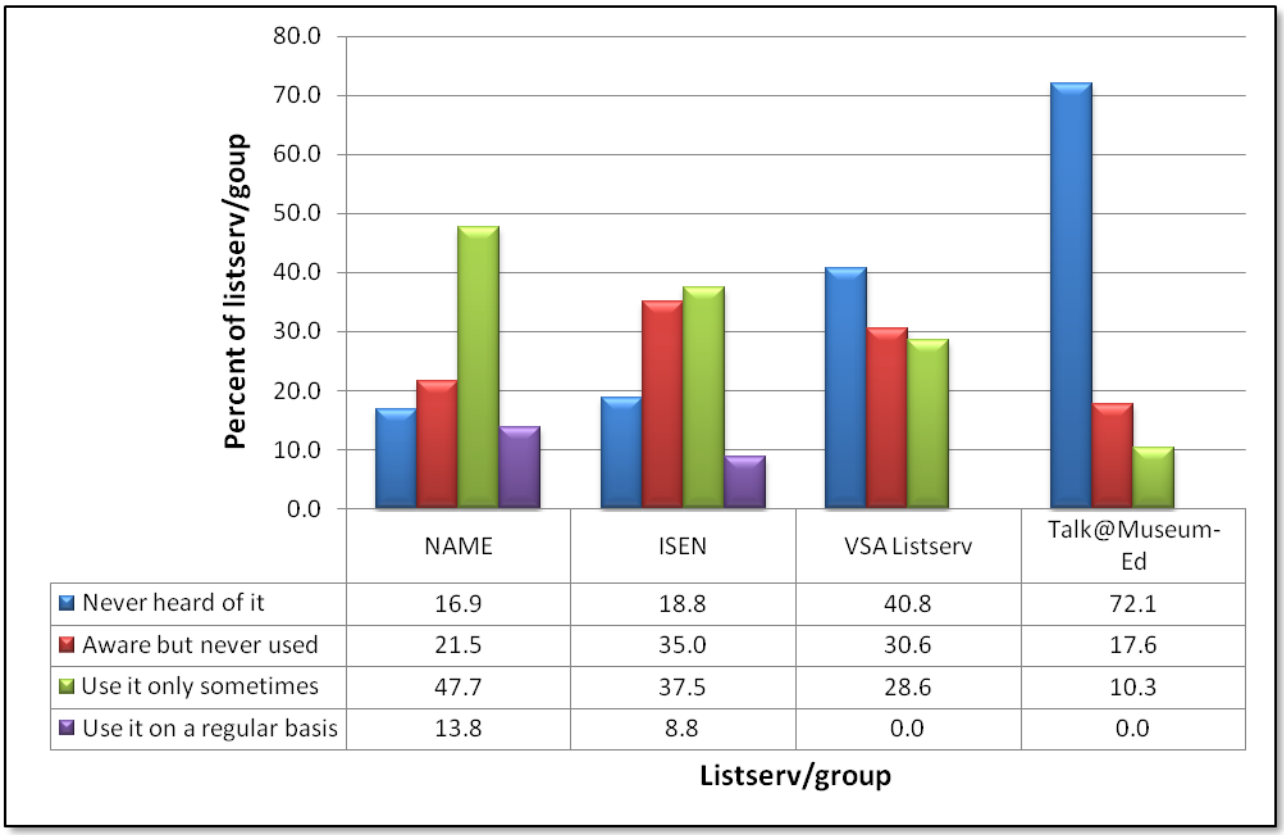

Figure 16. Comparison of awareness to use levels by listservs/groups (Awareness and Branding Survey).

Figure 17 shows a comparison the levels of awareness to use among the practitioner groups. Among exhibit practitioners (*N* = 133), over one-third (38.8%) said they were not aware of the site but considerable percentages reported awareness without using the site (22.6%), using the site sometimes (29.3%), and using ExhibitFiles on a regular basis (11.3%). Research and evaluation practitioners (*N* = 30) represented the lowest level of not being aware of the site (23.3%) as well as a fairly high percentage of respondents who were aware of the site but had not used it (36.7%) and a high percentage (40.0%) who reported using ExhibitFiles sometimes. Yet no research and evaluation practitioners reported using the site regularly. Among other informal learning practitioners (*N* = 107), a relatively large percentage (48.6%) were not aware of the site, although a fairly large percentage (31.8%) reported using it sometimes.

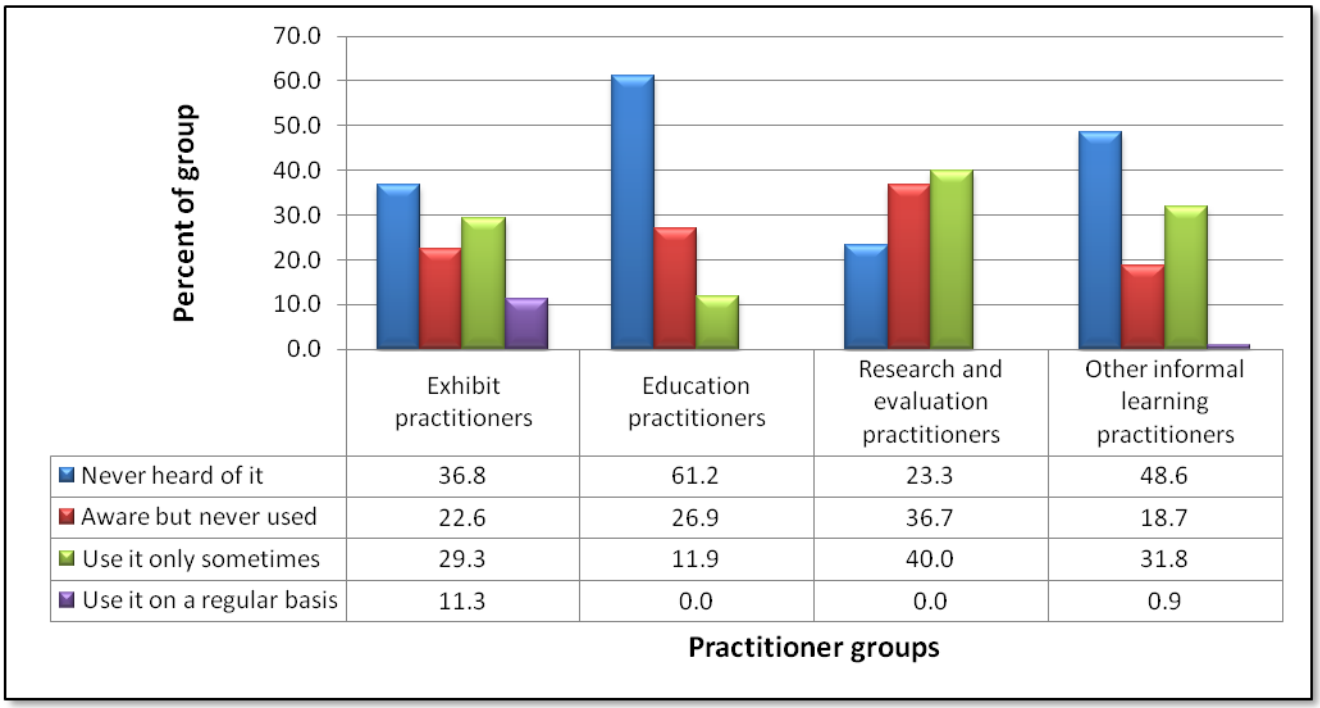

	Exhibit practitioners	Education practitioners	Research and evaluation practitioners	Other informal learning practitioners
Never heard of it	36.8	61.2	23.3	48.6
Aware but never used	22.6	26.9	36.7	18.7
Use it only sometimes	29.3	11.9	40.0	31.8
Use it on a regular basis	11.3	0.0	0.0	0.9

Figure 17. Awareness to use levels by practitioner groups (Awareness and Branding Survey, N = 377).

Figure 18 shows a comparison of awareness to use levels among exhibit practitioners (*N* = 133) by the contexts in which they work. The highest level of awareness and regular use is among exhibit practitioners (*N* = 32) working in other sectors, with 40.6% reporting using it sometimes and 25.0% reporting using it on a regular basis. Many of these respondents work freelance or in exhibit design groups. At just slightly lower levels of awareness to use are respondents working in science museums, with 40.5% reporting using it sometimes and 16.7% saying they visit regularly. Strikingly, exhibit developers working in other types of museums show high levels of being unaware of the site and low levels of having used the site, with only 15.3% reporting using it occasionally.

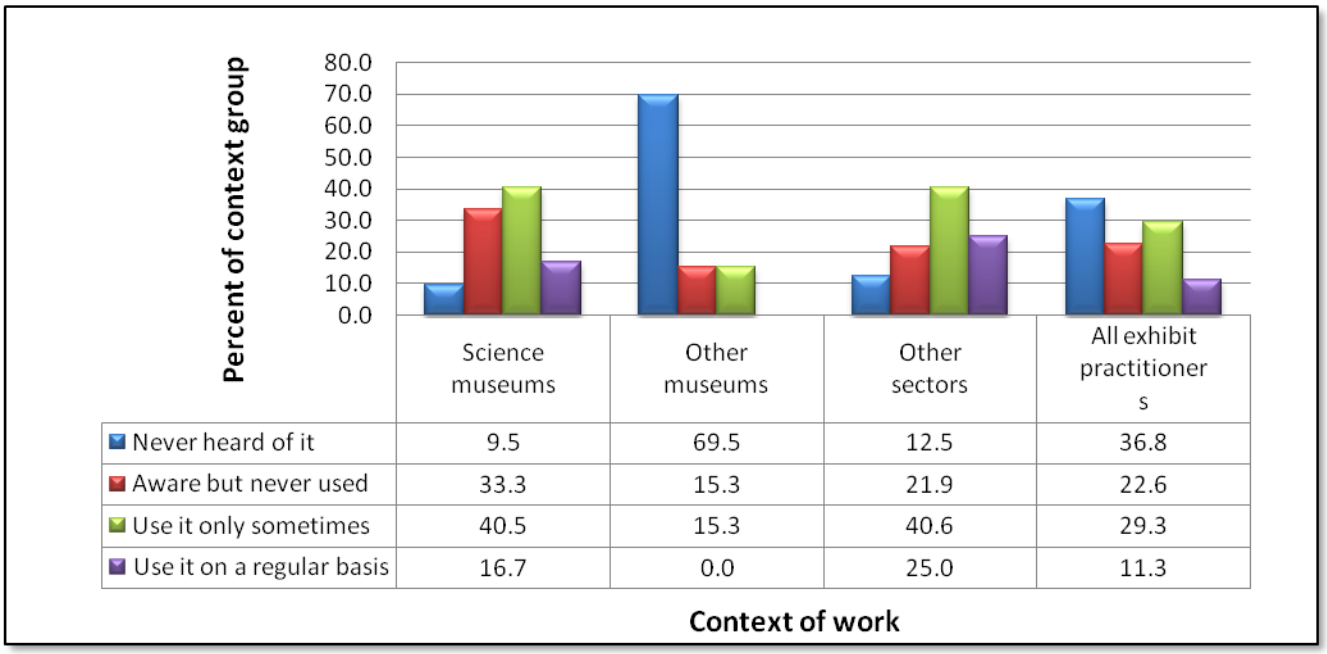

Figure 18. Exhibit practitioner awareness to use levels by context of work (Awareness and Branding Survey, N = 133).

Figure 19 shows how users of ExhibitFiles (*N* = 109, Awareness and Branding Survey) reported finding out about ExhibitFiles. The most frequent way of finding out (28.4%) about the site was through comments and recommendations from a colleague, followed by 17.4% of respondents who reported they could not remember. Among formal channels of communication, the ISEN listserv and the ASTC website were reported by 11.0% and 9.2%, respectively. About 5.0% of the users reported learning about the site through conference sessions, search engines, phone calls or emails from site developers, and articles in *The Exhibitionist,* the NAME professional journal. There were no significant differences among practitioner groups or among exhibit practitioners working in different contexts.

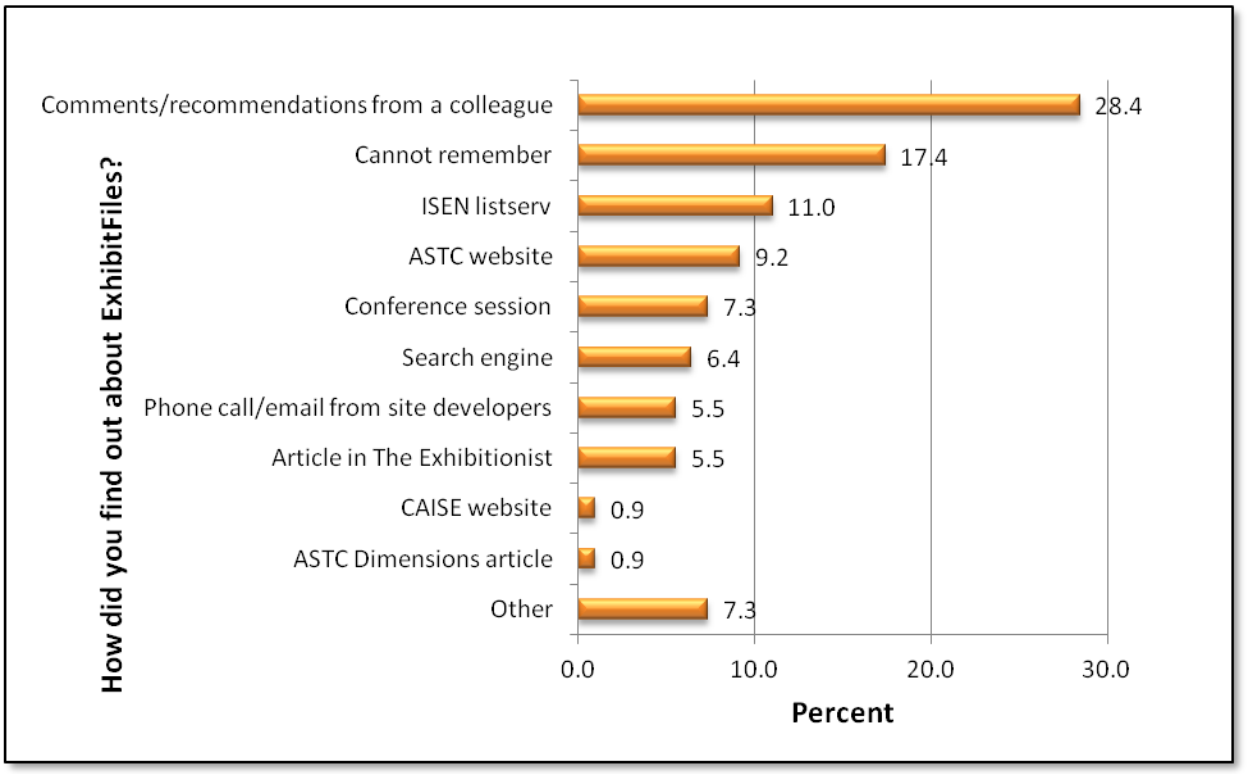

Figure 19. How did you find out about ExhibitFiles? (Awareness and Branding Survey, Users, N = 109).

An identical item was used to explore how users found out about ExhibitFiles for the Awareness and Branding Survey in 2011 and ExhibitFiles Member Survey in 2009. Responses to the item on both surveys were remarkably consistent. Among all survey respondents (*N* = 286, ExhibitFiles Member Survey), the most frequently cited way to find out about ExhibitFiles was through comments or recommendations by a colleague (32.3%), followed by a search engine (12.8%), a phone call or email from site developers (8.8%), a conference session (7.6%), the ASTC website (6.4%), and the ISEN listserv (5.6%). Substantial percentages of respondents did not recall (23.1%) or did not respond to this item (7.0%).

Levels of Growth and Participation

In the remedial evaluation, and again in stakeholder interviews, ExhibitFiles members called for a greater diversity of users, specifically in terms of diversity of site members contributing content. In 2011, Bits was added to the site to reduce the time and effort to participate and move members from the reading to contributing level of participation. Since the remedial study conducted in 2010, the site has continued to grow in membership. Concerns were expressed about overall levels of participation and site traffic. Questions addressed in this section include:

- What has been the growth trajectory in membership over the life of the project?
- Are levels of contribution to the site up or down since the remedial study?
- Have push e-newsletters been effective in prompting visits?
- Is site traffic consistent with membership growth?

Based on analysis of the database download, ExhibitFiles membership shows steady continuous growth over time. Figure 20 shows the total number of registered members by month over the life of the project.

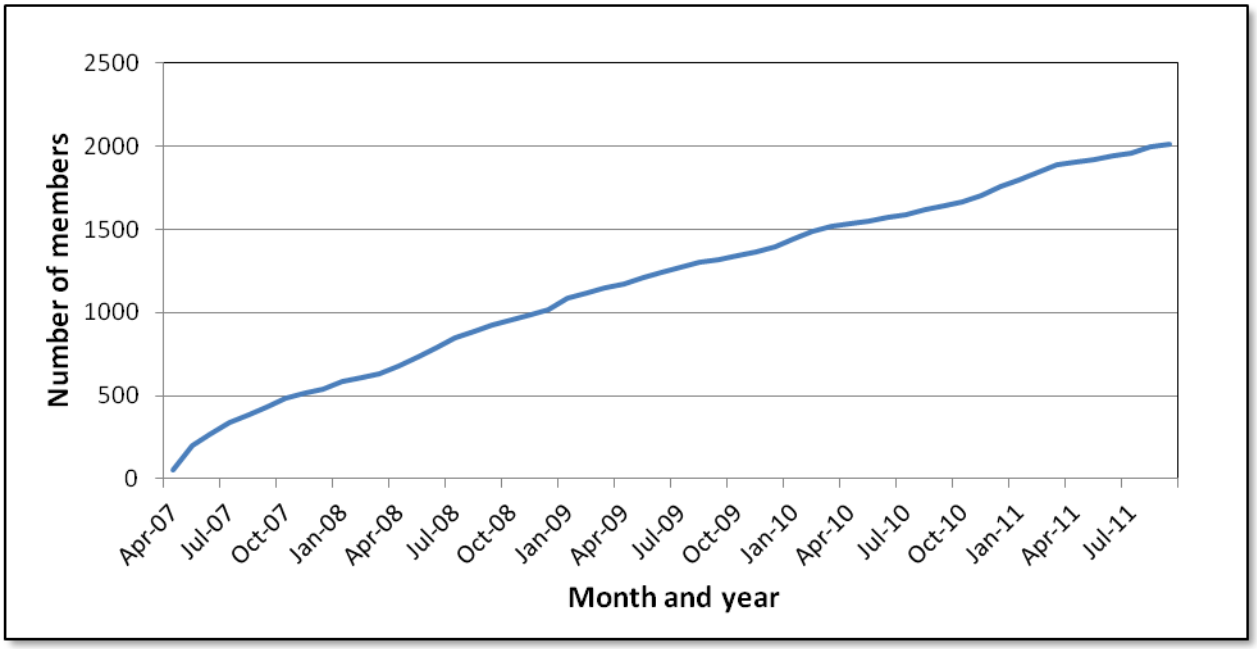

Figure 20. ExhibitFiles growth over time (ExhibitFiles Database, N = 2,008 members).

Overall, the level of participation on the site shows some change since the analysis of done for the remedial study based on November 2009 membership. Reflecting the overall growth in relation to the relatively few case studies submitted since 2010, the overall percentage of registered members who have submitted a case study dropped from 6.7% in 2009 to 4.3% in 2011. In contrast, only 5.2% of members had submitted at least one review in November 2009, but this percentage has increased to 11.3% in 2011. While Bits were intended to increase overall participation when they were added, only 7.4% of members have contributed at least one Bit. Finally, the overall percentage of registered members who have commented has dropped from 6.3% to 4.5%. This comparison is shown in Table 21.

Table 21. Types of Participation through September 2011 (ExhibitFiles Database, *N* = 2,008)

Type of Participation	Percent of Registered Members November 2009 (*N* = 1,357)	Percent of Registered Members October 2011 (*N* = 2,008)
Published a case study	6.7	4.3
Publish a review	5.2	11.3
Published at least one Bit	N/A	7.4
Commented at least once	6.3	4.5

The decrease in case studies may be due to a less active team of core contributors during 2010 and 2011 after stipends for their efforts ended. The increase in reviews may be related to other factors, such as museum studies and education instructors assigning students to publish reviews as part of their course work. In addition, a scan of recent reviews also indicates a wide variety of experienced and emerging professionals documenting and reflecting on museum experiences during their local and international travels.

While we cannot make a direct comparison between the Member Survey conducted in 2010 and the Awareness and Branding Survey conducted in 2011, there is an apparent shift in frequency of visits. In the 2010 Member Survey, the highest percentage of frequency of visits was once a month at 37.9%, followed by several times a year at 36.7%. Among respondents to the 2011 Awareness and Branding Survey, 109 respondents reported having used ExhibitFiles. Figure 21 shows the frequency of visiting the site among ExhibitFiles users who responded to the latter survey.

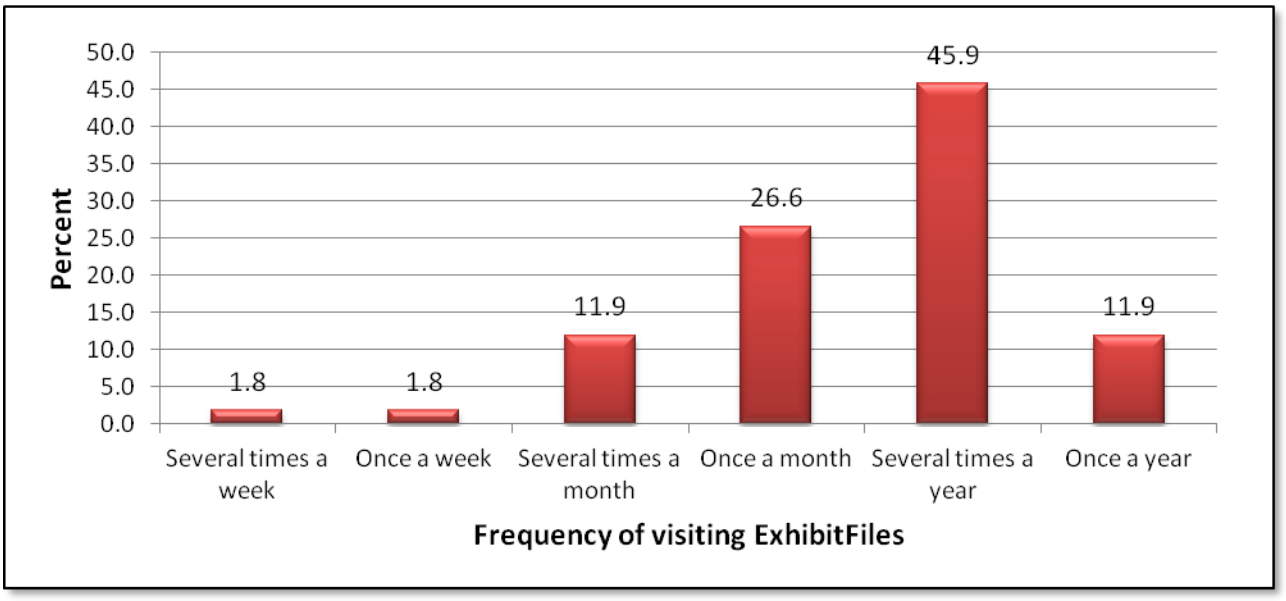

Figure 21. Frequency of visiting ExhibitFiles (Awareness and Branding Survey, All Users, N = 109).

ExhibitFiles showed a consistent growth rate over time in the number of total registered members and in the total number of postings. The average number of daily page views, however, did not show this same rate of growth. Overall, this finding indicates the site lacks what is sometimes called “stickiness”; a sticky website tends to draw people back for frequent repeat visits. Figure 22 compares growth rates among number of postings, members, and average daily page views to show this trend.

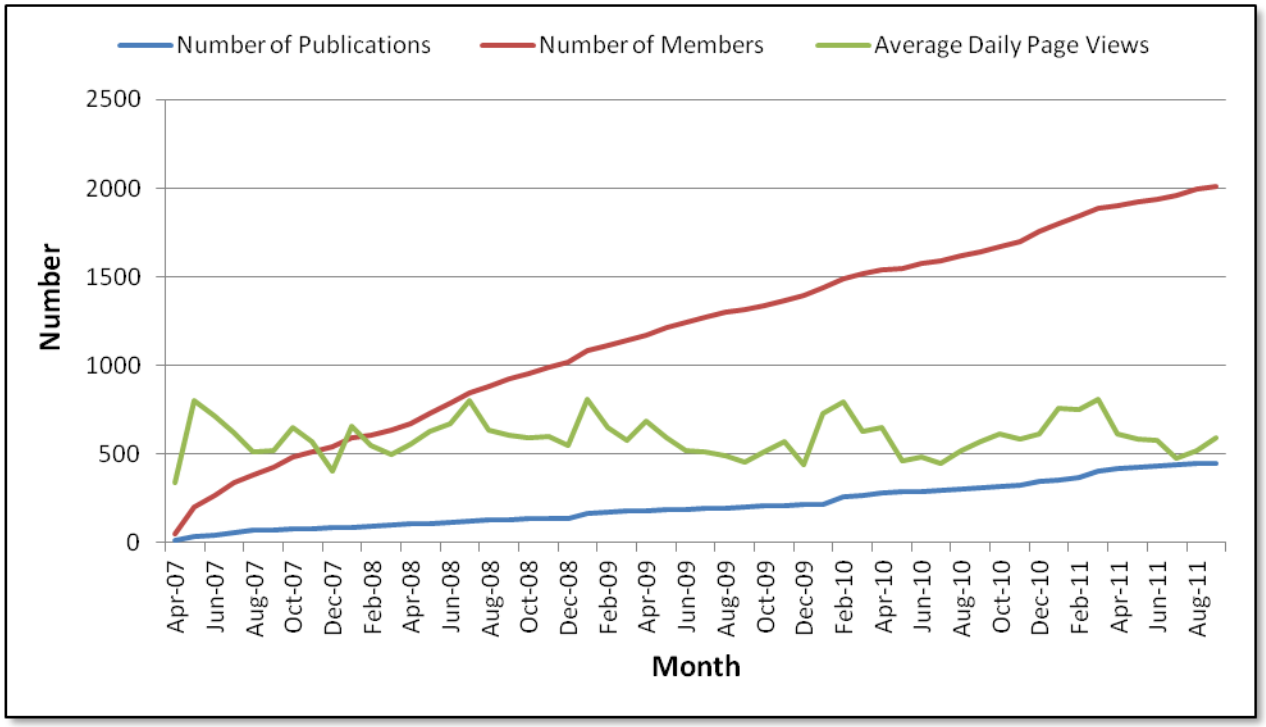

Figure 22. Comparison of growth rates among number of postings, members, and average daily page views (ExhibitFiles Database and Google Analytics).

Google Analytics provides additional information about traffic on the site. Figure 23 shows unique visitors to the site by month, compared over the five years ExhibitFiles has been open. After growth in 2007, 2008, and 2009, unique visitors to the site dropped in 2010. Growth remained consistent throughout the months of 2011 included in the analysis, with a sharp increase in October 2011. That monthly increase may have been due to the survey request that took respondents to the site after they had completed the survey.

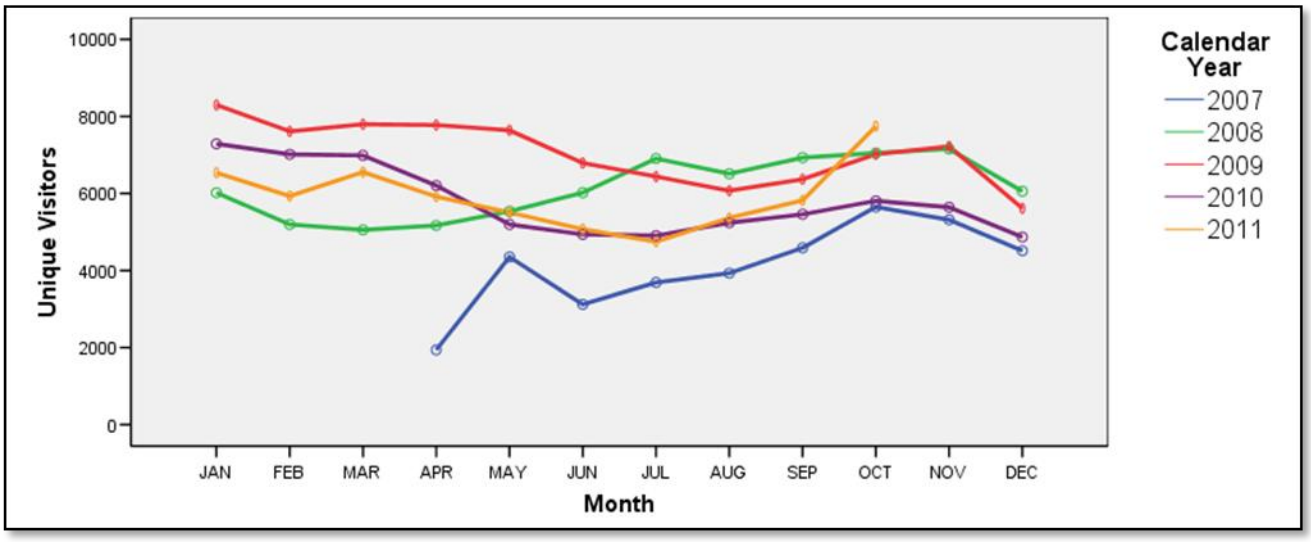

Figure 23. Unique visitors by month and calendar year (Google Analytics).

Figure 24 shows the number of page views on the site over the same time period shown in Figure 23. Across all years, there are sharp increases in the number of page views in different months. One explanation could be visitors using the site, and several pages of the site, to develop grant proposals. But we have no historic data with which to compare these peaks of use.

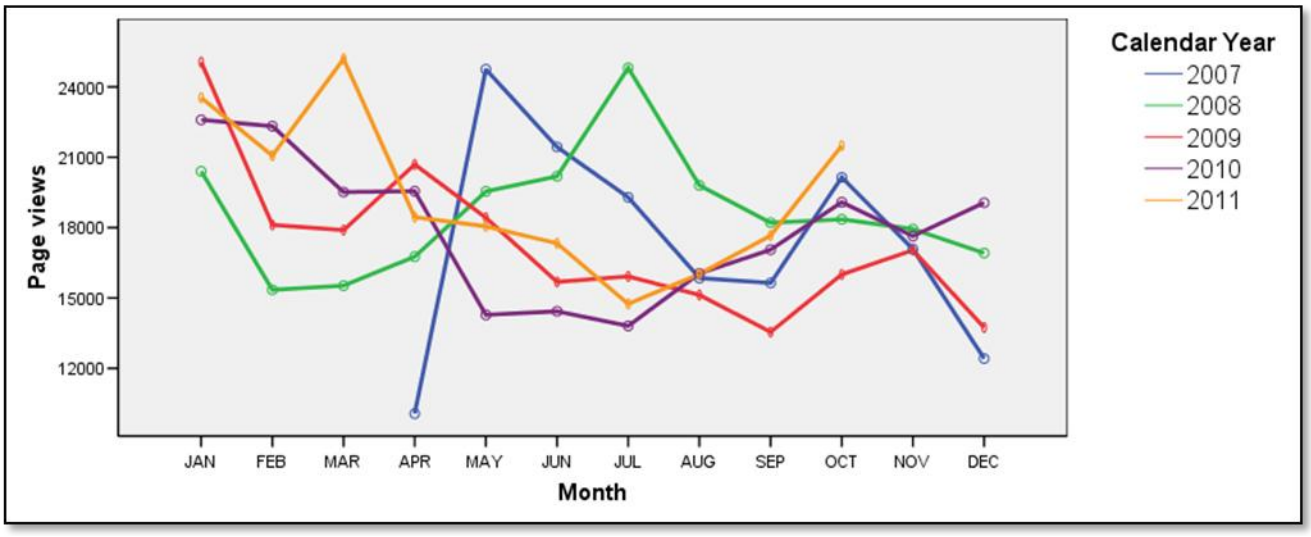

Figure 24. Page views per month and calendar year (Google Analytics).

Finally, the effect of the push e-newsletters was explored. Table 22 shows the dates on which e-newsletters were sent to registered members. (Number of contacts is lower than site membership due to some members opting out of the emailed newsletter updates.) Based on statistics from iContact, about 35% to 40% of individuals who received emails opened them, and between about 10% to 15%

then clicked on a hyperlink in the newsletter to visit the site. Additional data from iContact indicate that some individuals clicked on the newsletter multiple times.

Table 22. E-newsletter—Numbers Sent, Percent Opened, and Clicked-throughs to Site

Date E-newsletter Sent	Number of Contacts Sent Newsletter	Percent that Opened Email	Percent of Contacts Who Click Through to ExhibitFiles
Tuesday, August 24, 2010	1,178	41.9	16.0
Monday, September 27, 2010	1,206	40.0	16.0
Monday, December 13, 2010	1,281	36.8	11.8
Friday, January 28, 2011	1,349	37.5	13.9
Tuesday, April 12, 2011	1,405	37.4	17.5
Wednesday, May 18, 2011	1,345	37.7	10.9
Friday, June 24, 2011	1,331	35.3	10.9
Monday, August 22, 2011	1,302	35.2	11.0
Thursday, September 29, 2011	1,336	37.0	12.1
Tuesday, November 01, 2011	1,340	34.5	9.2
Wednesday, December 21, 2011	1,387	35.1	10.7

Looking at site traffic from Google Analytics on a daily basis indicates the newsletter emails did produce peaks in visitation on the day of the visit. Two sample mailings, with typical increases on days push e-newsletters were sent, are shown in Figures 25 and 26.

Figure 25. Newsletter impact (unique daily visitors September 1–30, 2010, Google Analytics).

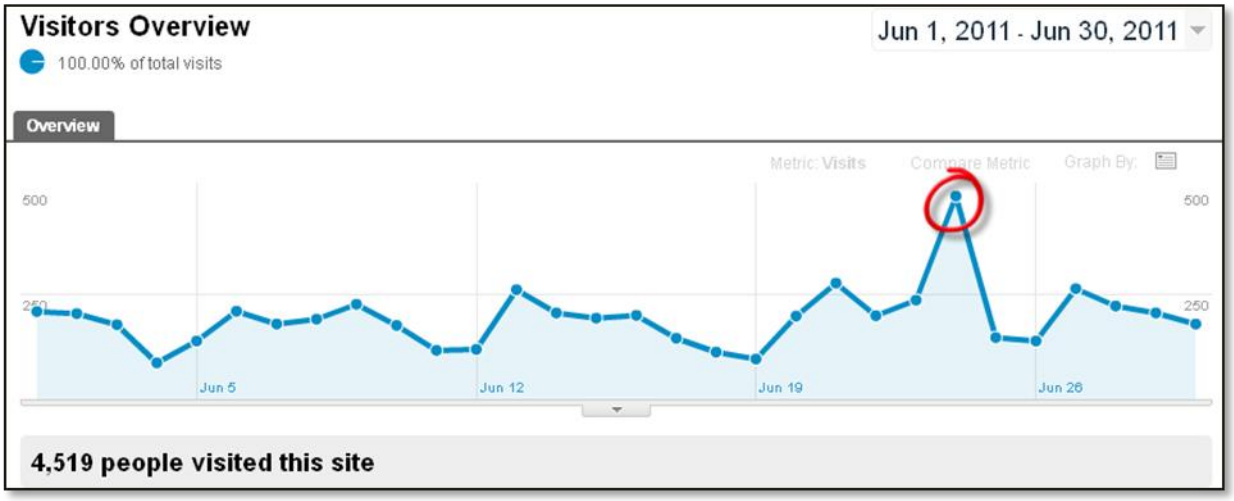

Figure 26. Newsletter impact (unique daily visitors June 1–30, 2011, Google Analytics).

In summary, membership and contributions to the site have grown over time, with a shift in contributions from case studies earlier in the life of the site to reviews after early-2010. Bits did not appear to substantially increase overall participation. While membership and contributions have grown, based on survey responses and statistics from Google Analytics, the frequency of site visits decreased between 2009 and 2011. This decrease may be due to some changing use of the site, competition from ever-increasing numbers of online resources, or persistent problems with the search functions.

Branding

In-depth interviews with stakeholders indicated different people had differing perceptions and priorities related to the overall purposes, uses, and role of ExhibitFiles in the professional development of exhibit practitioners. Clearly, the site sponsors and others involved primarily in informal science education conceived of the site as part of the informal science education infrastructure. Yet members of the NAME Board and senior exhibit practitioners clearly valued the site serving exhibit practitioners across the museum field. They pointed out that exhibit developers often move from one type of museum to another and from a museum to a for-profit firm. Many museum exhibitions, in all types of museums, are developed by outside exhibit designers and firms. Some long-time exhibit practitioners observed that with outsourcing, there may be fewer in-house exhibit practitioners than there were in the early to mid-1990s.

Finally, while ExhibitFiles was open to exhibit practitioners in all contexts of work, much of the information about the site may have been shared in postings, conferences, listservs, and groups that were oriented to informal science. In addition, some in-depth interview respondents in the Remedial Study appeared to have expectations for the site to function much like a listserv rather than as an archive and a distributed blog.

While information alone will not produce consensus about all these issues, understanding how current users perceive the site can be helpful in making decisions about the focus of any awareness campaigns for the site and partnerships developed. We explored two questions in this section:

- How do users perceive ExhibitFiles?
- Are there any group differences in the overall perception of the site's brand?

On the Awareness and Branding Survey, respondents who had used ExhibitFiles were asked to what extent each of six statements described ExhibitFiles. They were asked to rate each item from 1=Strongly disagree to 5=Strongly agree. Figure 27 shows a comparison of mean ratings for these items. Only respondents who had used ExhibitFiles were asked to rate these items; some chose the Not Applicable (NA) response—which meant that different numbers of respondents answered each item. This result is shown in Table 23, along with other descriptive statistics for each of the branding items. Based on the standard errors of the mean (SEM), a difference of about .1 between mean ratings can be considered significantly different.

While there was not complete agreement (i.e., very high ratings in the 4 to 5 point range) on any of the items, three of the statements were more highly rated than the other three. Items focusing on ExhibitFiles as a place to share lessons learned about exhibit practice, the openness of the site to all exhibit practitioners, and the number of examples of international exhibit practice were all rated comparatively high—that is, with mean ratings of 3.8% to 4.0%. Note that this sample had higher numbers of exhibit practitioners working in informal science contexts than in other types of museums. In addition, the sample represented very few international ExhibitFiles users.

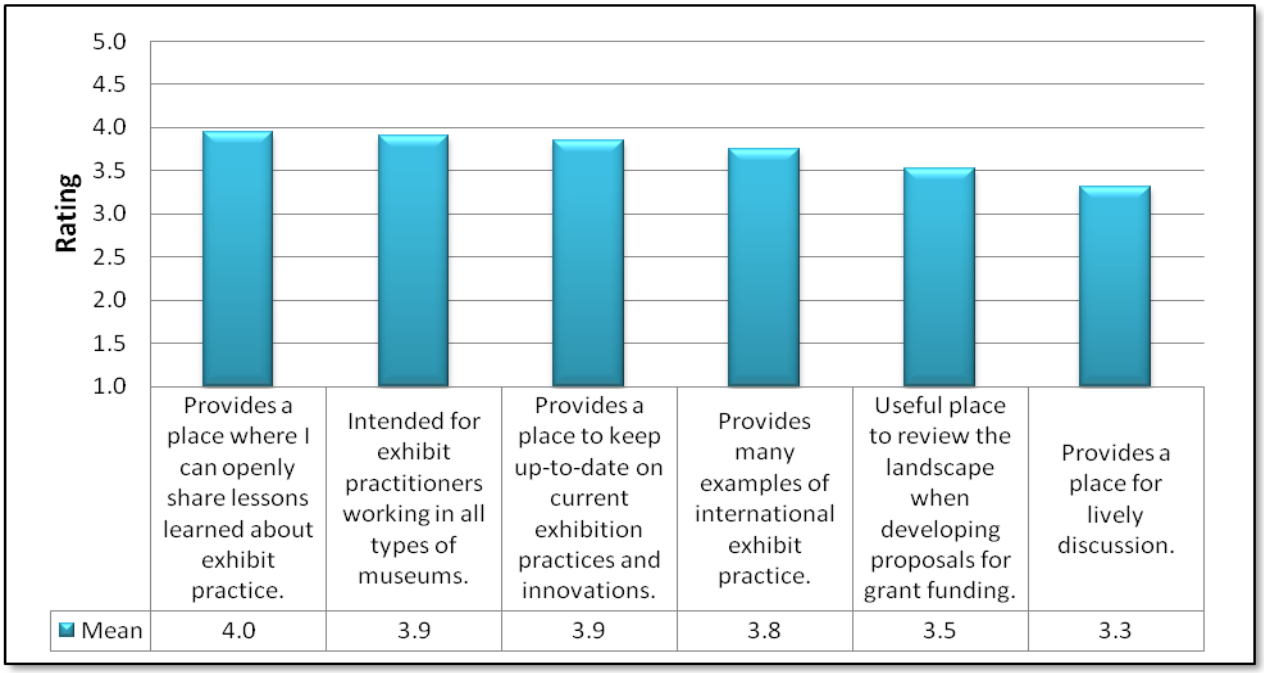

Figure 27. Mean ratings of branding items.

Table 23. Descriptive Statistics for Branding Items

Descriptive Statistics	Mean	N	Median	SD	SEM
Provides a place where I can openly share lessons learned about exhibit practice.	4.0	86	4.0	1.1	0.1
Intended for exhibit practitioners working in all types of museums.	3.9	106	4.0	1.0	0.1
Provides a place to keep up to date on current exhibition practices and innovations.	3.9	102	4.0	1.0	0.1
Provides many examples of international exhibit practice.	3.8	91	4.0	1.0	0.1
Useful place to review the landscape when developing proposals for grant funding.	3.5	70	4.0	1.1	0.1
Provides a place for lively discussion.	3.3	94	3.0	1.1	0.1

The two items with the lowest overall ratings focused on perceptions of (1) usefulness of the site for reviewing the landscape when developing proposals; and (2) ExhibitFiles as a lively place for discussion. Based on open-ended comments on the Awareness and Branding Survey, the lower ratings about the usefulness of the site to review the landscape for grant proposal development may be related to the problems users had searching the site. Lower ratings of the site as a place for lively discussion may be related to comments made by users in in-depth interviews for the remedial evaluation. Respondents noted less discussion on ExhibitFiles than among participants in the LinkedIn group.

> *Well it's interesting because I see more discussion on say LinkedIn or you know certainly the listserv type format, than I do on ExhibitFiles. I mean I—I think I've commented a couple of times on reviews and sort of followed that strand off of a review. And often—I think more often than not, there's not a lot of commentary coming off of—coming off of a review (EXF1_MEM_TID_934_051310_ct).*

One respondent explained that she rarely commented on ExhibitFiles because she had to shift through case studies and reviews to find conversations:

> *I want to engage with ExhibitFiles in the same ways that I like looking at blogs. Where it's almost like the information is already curated for me from someone who I really am aligned with or respect in the field. . . . I think that the interface of ExhibitFiles [makes] you really do have to dig and then maybe hope that you come up with something that. . . . I'm probably not going to dig. (EXF1_MEM_TID_1429_051710_ct).*

Another correspondent also referred to perceived challenges in engaging in conversations:

> *And sometimes the unit of analysis and the unit of conversation need to be a topic of some characteristic of the exhibit or some innovation or some feature or some strategy. And that the way it's structured with the comments just by review or by case study doesn't promote that. . . . The blog may be somewhere that might happen. Or there might be some other functionality that let ongoing conversations [be] more coherent (EXF1_MEM_TID_543_051210_ct).*

Several other respondents expressed the desire for more discussion on ExhibitFiles. Respondents indicated they rarely visited the blog. The blog was not prominently featured on the first page of the site, and during in-depth interviews we found many respondents had never visited this section. Others saw potential for the blog in supporting more substantive discussion and participation.

> *But if [the blog] could somehow be a little more prominent, and perhaps even, you know, seed the conversation. . . . Because we really haven't had any real discussions. . . . There are discussions happening they're kind of more remote from each other. You know, there—there might be something brought up [in] a discussion over—about a, you know, a review, but it stays over there attached to that one exhibit and doesn't really have a relationship to anything else that's happening on the site (EXF1_MEM_TID_543_051210_ct).*

Finally, challenges with searching the site may have most strongly affected individuals trying to use the site to research grant proposals. On the item focusing on using the site to review the landscape for grant proposals, exhibit practitioners working in science museums had a mean rating of 2.7 (SD = 1.2, *N* = 12). Those working in other contexts rated the item at 4.1 (SD = .1, *N* = 9), and those working in other sectors rated it at 3.6 (SD = 1.1, *N* = 14). These differences were significantly different ($p < .05$).

In summary, due to the composition of the survey sample, the real difference between items was not particularly revealing in defining the brand of the site. Lower-rated items may indicate problems with the search function and lack of areas for discussion.

Niche

The issues of niche are closely related to issues of both branding and awareness. In the remedial evaluation, we reported that a useful way of looking at ExhibitFiles was as a professional development resource among an ecology of professional development information and experiences used by exhibit practitioners. The evaluator hypothesized that the ecologies of online resources for different practitioner groups and exhibit practitioners working in different contexts would vary. Understanding these differences provides an explanation for different levels of awareness. In addition, if ExhibitFiles managers decide to raise awareness, build partnerships with other professional associations, and diversify content, then knowing the ecology of online resources will be useful to these efforts.

Questions to clarify and define the niche of ExhibitFiles in this study included:

- What is the niche of ExhibitFiles within the ecology of professional development for informal learning practitioner groups?
- Does ExhibitFiles fill a similar niche among other informal learning practitioner groups?

- Does ExhibitFiles fill a niche for all exhibit practitioners or is it primarily a site for informal science exhibit practitioners?

In this study, we limited our exploration to online resources. The Awareness and Branding Survey had too few respondents from outside the U.S. to explore the niche ExhibitFiles fills in online resources among exhibit practitioners internationally.

Some aspects of this particular study and survey need to be kept clearly in mind when interpreting the comparisons exploring niche. The order of questions (items) in the Awareness and Branding Survey affected some responses. In order to avoid a limited self-selection of respondents (i.e., those who already knew about or used ExhibitFiles), the topic of the survey (ExhibitFiles) was not revealed in the request to respond to the survey. This topic remained masked through the first few items.

The survey first asked respondents if they used any of the Informal Common online resources. At this point in the survey, ExhibitFiles was not included in the list. This item was followed by an open-ended item asking respondents to list other resources they used. Only in the next item were respondents asked about their awareness and use of ExhibitFiles.

In addition, online resources listed by respondents reflect the groups and listservs selected by the evaluator. For example, the relatively frequent listing of the Association of State and Local History (AASLH) is probably due to the evaluator selecting two online groups sponsored by that association. The very low rate of any art-related websites is likely caused by very low response rates among groups specifically serving art museums.

Since ExhibitFiles was included among the sites participating in Informal Commons, the sites included in that search capability appeared an appropriate comparison. Figure 28 shows the percentage of use of Informal Commons online resources among practitioner groups. Two things are important to keep in mind in interpreting these responses. First, Informal Commons had been online only a few months and had not been highly publicized during this beta test phase. Second, ExhibitFiles use was calculated from another survey item.

In general, this comparison shows a unique profile of online resource use for exhibit practitioners. Among all practitioner groups except exhibit practitioners, the most highly used online resources among all Informal Commons options was the VSA website. Given that research and evaluation topics are of interest across among all practitioner groups, this result makes sense. The next highest percentage across all groups was InformalScience.org, another site with general interest. In contrast, the highest percentage of use among exhibit practitioners was the NAME website (58.6%), followed by ExhibitFiles (40.6%). To some extent, these percentages may be due to the intentional recruitment of exhibit practitioners working in history and art museums to take the survey.

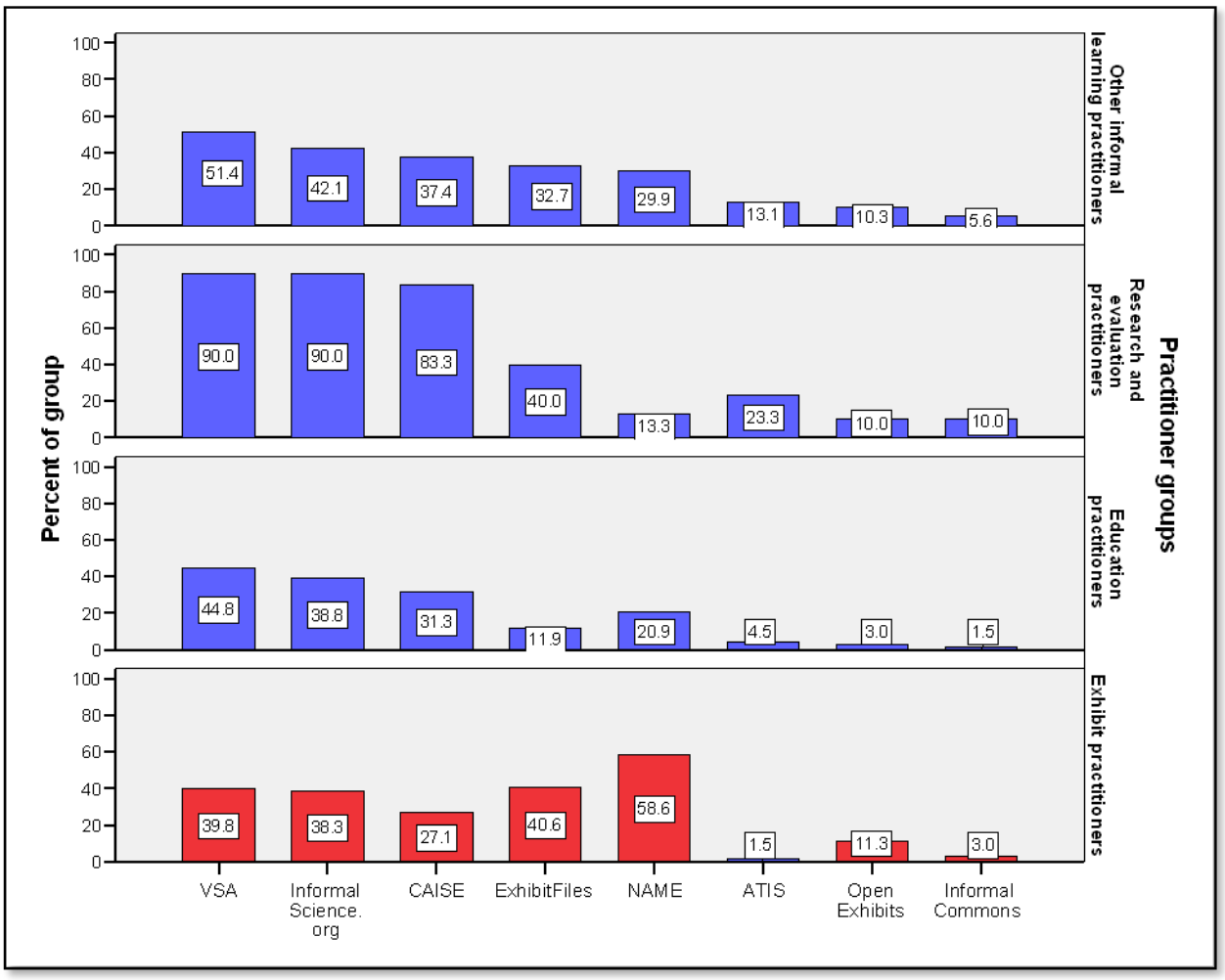

Figure 28. Comparison of percentage of use among Informal Commons sites by practitioner groups.

Figure 29 shows the pattern of use among Informal Common sites for exhibit practitioners working in different contexts. While the NAME website had the highest level of use among exhibit practitioners working in other sectors and in other museum types, the highest level of use among those working in science museums was Informalscience.org.

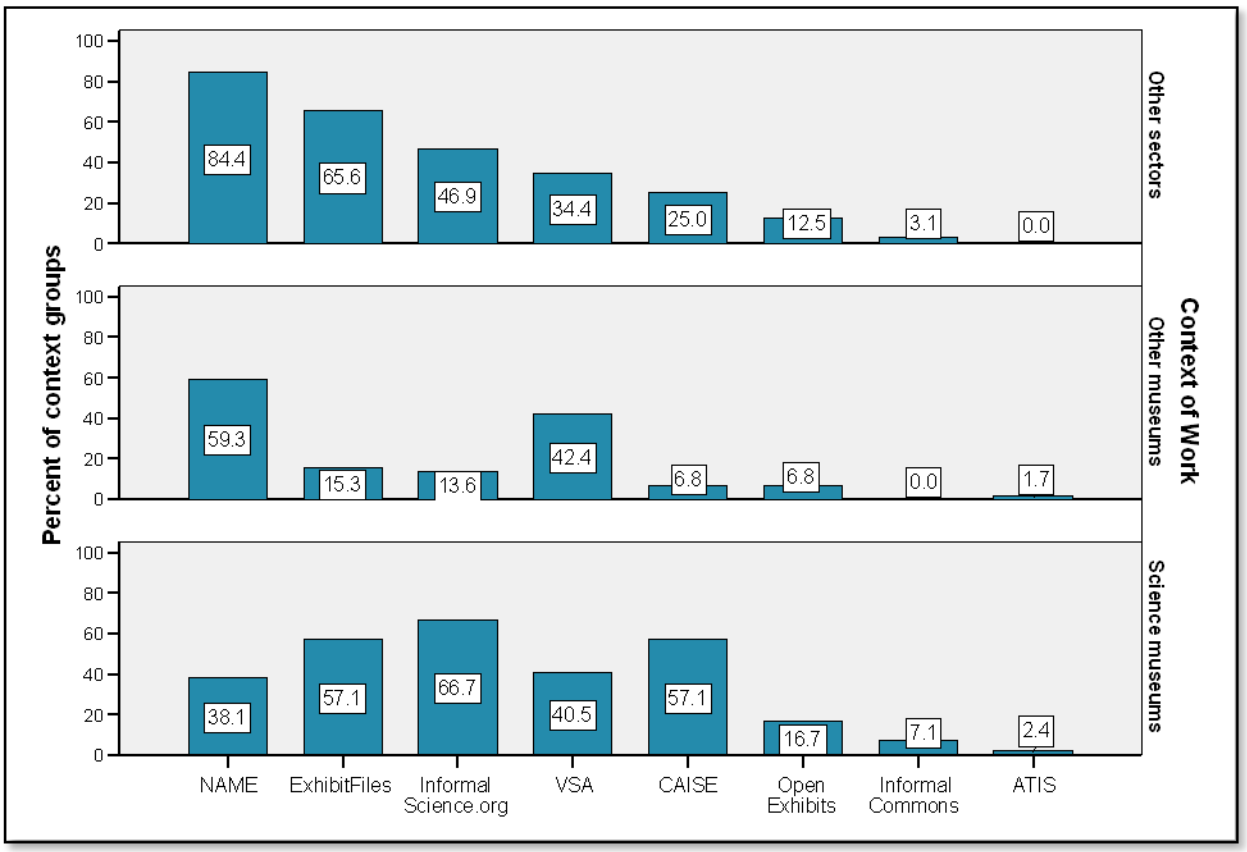

Figure 29. Comparison of percentage of use among exhibit practitioners working in different contexts.

Survey respondents also were asked what other online resources they used. ExhibitFiles had not been mentioned in any items at the point in the survey at which this question was asked; thus, listing ExhibitFiles was not cued. This open-ended response was coded for up to five online resources. The most striking finding was the sheer number of different online resources cited. Among all respondents (*N* = 377), a total of 117 different online resources were listed. Not surprisingly, these resources varied greatly among practitioner groups. Table 24 shows the top five rankings for each practitioner group. Resources with identical number of listings are shown as tied rankings.

Table 24. Top 5 Rankings for Other Online Resources Listed by Practitioners Group

Rank	Exhibit Practitioners (*N* = 133)	Rank	Education Practitioners (*N* = 67)	Rank	Research and Evaluation Practitioners (*N* = 30)	Rank	Other Informal Learning Practitioners (*N* = 107)	Rank	All (*N* = 337)
1	ExhibitFiles	1	AAM website	1	AEA website	1	AAM website	1	AAM website
2	AAM website	2	Museum-Ed website	2	ExhibitFiles	2	ASTC website	2	ExhibitFiles
3	AASLH website	3	ASTC website	3	AAM website	3	AAM webinars	3	ASTC website
4	AAM webinars	4	AAM webinars	3	AEA 365 blog	4	AASLH website	4	AAM webinars
4	ASTC- ISEN-L	4	MER website	3	AEA evaltalk listserv	5	AASLH-StEPS	5	AASLH website
4	howtosmile.org			3	ASTC- ISEN-L	5	Citizen Science		
4	Blogs, general			3	LinkedIn, general	5	howtosmile.org		
4	LinkedIn, general			3	Museum 2.0 blog	5	NAI website		
4	MAAM website			4	CARE-AAM website	5	NSTA website		
4	MEM website			5	AAM website				
4	Museum-Ed website			5	ASTC Connect				
				5	ASTC website				

Table 25. Top 5 Rankings for Other Online Resources Listed by Exhibit Practitioners Working in Different Contexts

Rank	Work in science museums	Rank	Work in other museums	Rank	Work in other contexts	Rank	All
1	ExhibitFiles	1	AAM website	1	ExhibitFiles	1	ExhibitFiles
2	ASTC- ISEN-L	2	AAM webinars	2	AAM website	2	AAM website
2	howtosmile.org	2	ExhibitFiles	2	AASLH website	3	AASLH website
4	NISEnet website	4	Museum-Ed website	2	Exploratorium website	3	AAM webinars
4	AASLH website	5	AASLH website	2	MAAM website	3	ASTC- ISEN-L
4	Google	5	AASLS online workshops	5	AAM webinars	3	howtosmile.org
4	MEM website	5	Blogs, general	5	ACM website		
		5	AAMG-L listserv	5	ASTC Connect		

Level and Types of Change

In stakeholder interviews, the evaluator heard diverse viewpoints about the level and types of change needed to sustain ExhibitFiles at useful levels. Some respondents assumed that since initial development of the website had been completed during the grant-funded period, the level of change would be minimal and the site could go forward on operational status. Others assumed that due to growth of the site content compared to original expectations and the ongoing innovations in online experience, a redevelopment of the site might be needed. In this section, we explore the following question:

- What types and levels of change to the website design and operation are needed for ongoing sustainability of ExhibitFiles?

In the Remedial Evaluation report, several changes to the site were recommended.

> *Respondents wanted improved search functions and places for more discussion across exhibits and exhibitions. Contributions of case studies and reviews appeared on par with other web-based social networking sites. However, among respondents there were some perceptions that there should be more case studies and reviews, more members, and greater levels of participation by registered members. . . . Respondents to both the survey and in in-depth interviews pointed out the importance of receiving email reminders about new items on the site. . . . The highest priority site revision is improvement of search functions for content and members. Improved search functions support targeted visits to prepare grant applications, find information for new project development, and locate colleagues with whom to discuss ideas and solve problems. The website blog appears a promising place for discussions, and ideal for announcing changes and events in the field. Currently, relatively*

few users go to the blog on a regular basis. The blog needs to be a more visible element if it is to be used in these ways.

Some respondents recommended that the project team extend the role of core contributors, asking them to contact colleagues to request case studies and reviews for specific sectors of the informal learning field, (e.g., children's museums, history museums, art museums, zoos, gardens, or parks.) Other promising ideas from respondents were to have guest bloggers and set deadlines for the submission of case studies and reviews on specific themes (Tisdal, 2010, pp. iv–v).

Efforts toward implementing some of these recommendations were undertaken. During the time period between the remedial report and the summative evaluation study, the ExhibitFiles PI initiated periodic e-newsletters to push visitation and highlight new contributions to the site. In addition, a joint project with NAME was explored to deepen the connection with this association that serves exhibit practitioners across all types of museums in the U.S. and to encourage the submission of case studies of influential exhibitions. This partnership did not develop, but guest bloggers were invited to publish on the ExhibitFiles blog. In 2011, there were 21 blog posts, several by guest bloggers, and some of looked at themes across cases.

Two items on the Awareness and Branding Survey focused on this issue. To assess overall satisfaction with the site, respondents who reported they used the site were asked if they would recommend it to a colleague. While a vast majority of responses were in the positive direction, equal percentages (43.1%, *N* = 109) responded probably and definitely. While these percentages indicate considerable satisfaction with the site, they also indicate that users' experiences could be better. Figure 30 shows responses to this item. The distribution of responses to the satisfaction items is shown in Figure 31.

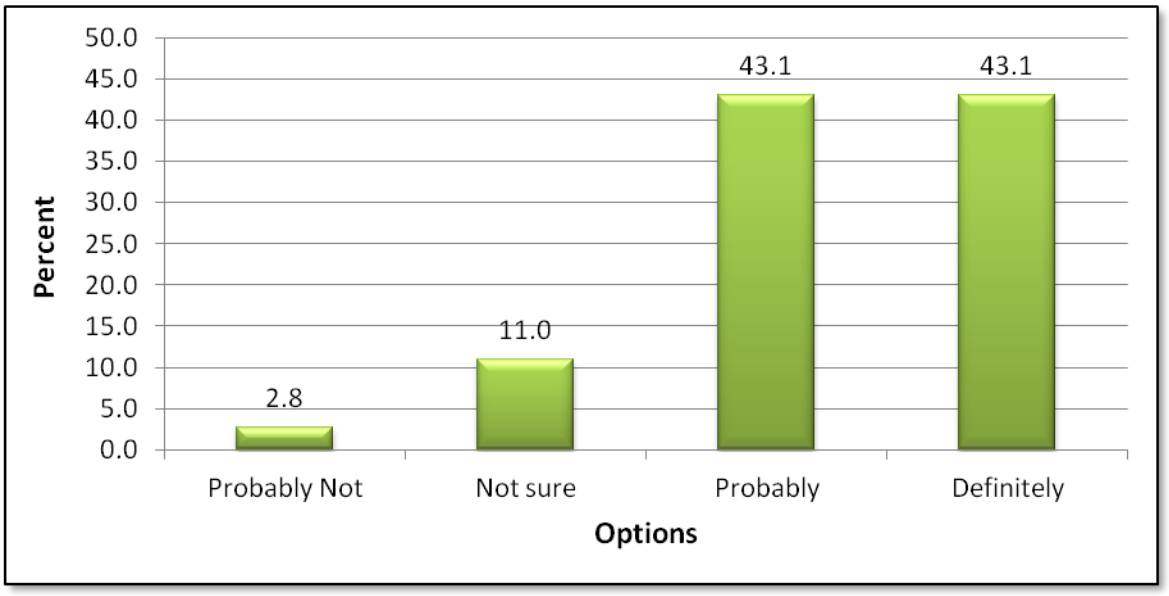

Figure 30. Would you recommend ExhibitFiles to a colleague? (Awareness and Branding Survey, N = 109).

The other item asked, "What is it that you would most like to change about Exhibit Files?" Only 56 respondents wrote open-ended comments to this question. Up to three items were coded for each response. Figure 31 shows the percentage of cases (respondents) citing each item. Many of these responses were similar to the findings reported in the Remedial Evaluation, with the top five changes recommended being improved search functions, more content/greater diversity of content, more frequent email prompts, more discussion, and more participants/greater diversity of participants.

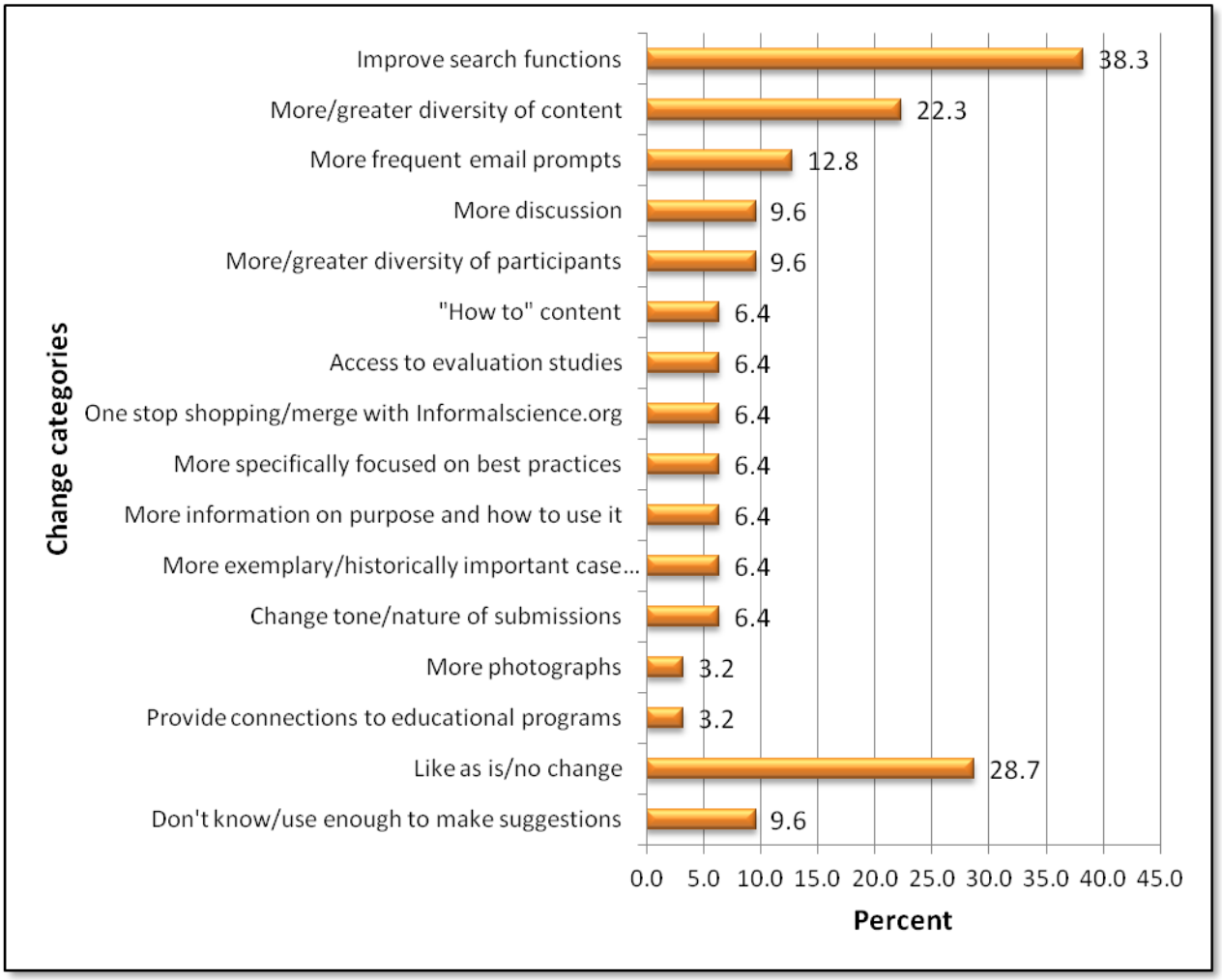

Figure 31. Changes recommended for ExhibitFiles (Awareness and Branding Survey, N = 56).

Over one-quarter of those responding said they like the site as it is and recommended no changes.

Improved search functions at 38.3% (*N* = 56 cases) was by far the most frequently recommended change. Responses in this category included the following:

Indexing and navigating from one case to another is cumbersome. Only 4 visible at one time?!! Make it searchable with key words! If I'm looking for an exhibit or a type of exhibit, I don't have time or desire to page through lots of pictures of exhibits. I want to be able to search in a convenient way.

Making searching for keywords more productive

Not enough search terms associated with each case.

More content/greater diversity of content was another change recommended by a considerable percentage of respondents (22.3%). Comments in this category included:

Greater diversity of exhibition types and content

I'd like it to have more case studies, and more from outside the U.S.

Most of the exhibit reviews are of informal science institutions. I'd like to see a greater diversity of museums.

Several respondents (12.8%) indicated they would like more frequent email prompts.:

It should "push" more, the way my LinkedIn groups do. I can see when things have been posted, and pick and choose what I want to view (like this reminder to fill out this survey, which I believe I've not done before).

It used to send me weekly notifications which would prompt me to go see what's new.

Maybe higher frequency in a Newsletter? I like that it's there, and I mean to use it, I just haven't gotten around to using it yet.

Several other respondents (9.6%) focused on alternative ways to participate and more discussion on the site:

I'm also interested in other ways to interact on the site other than reading and writing reviews.

More discussion.

Provide a place to post questions/comments and to solicit advice.

An additional 9.6% stressed having a greater diversity of participants and content:

More for small museums and historical societies

More marketing to institutions. Make sure that everyone knows this is a resource for ALL museums.

Other comments indicated that users may need help in filtering all the information to which they have access. A few (6.4%) recommended "one-stop shopping" and merging sites they considered similar:

> *With so many online resources, it is so difficult to use all of them. I think Exhibit Files and Informalscience.org should be one site, like one-stop shopping.*

Other types of changes were recommended less frequently (6.4%) but echoed themes from the remedial evaluation.

> *I would like to see more about what it is and its purpose. I did eventually find the "About Us" paragraph but I had to really search for it. I would like to see that on the front page .*

There was some criticism of the tone of some submissions.

> *It feels more like a mechanism for people to critique exhibits rather than to provide real professional development or positive means for encouraging best practices. It can feel like a soap box rather than a tool.*

> *Not that interesting because it seems too internally focused and insulated, self-promoting is a term that comes to mind.*

Others specifically noted more exemplary/historically important case studies as a need.

> *Get more exhibitions on the site, especially older ones that we have all heard about over the years. Especially before anyone with first hand knowledge of it is no longer with us.*

> *I'd like to see all of the competitors in the AAM Excellence in Exhibition competition post their entries there. I think it might also be interesting to post links to newspaper and web reviews of exhibitions by journalists outside our field.*

A few respondents specifically requested more access and discussion of evaluation studies.

> *More links to evaluations; more critical dialogue about museum practice and learning.*

> *Provide systematic access to evaluation studies completed in all sorts of museums (beyond even what informalscience.org provides.*

Finally, a few people wanted more content focusing on the nitty-gritty "how-to" of exhibit practice.

> *I would like to see more 'how to' articles on exhibit design, fabrication and evaluation—perhaps a 'share-ware' kind of place where concepts, drawings and other useful material can be posted for others to use.*

> *Most times when I should go to ExhibitFiles, I go to Transom.org instead. It's site with a similar mission but for public radio. It has both nitty gritty details (help me figure out which microphone to use).*

In summary, many of the findings from the remedial evaluation are still relevant. An improved search function appears to be the change needed most urgently because to use content for project and proposal development, ExhibitFiles members must first be able to find what they are seeking by topic or subject. A second priority appears to be continuing, and perhaps increasing, the frequency of the e-newsletter. In addition, requests for areas for discussion of best practices across individual items continued. Users also wanted greater diversity of content in terms of museum types and geographic areas as well as additions of case studies for historic and noteworthy exhibitions. All these changes have implications for the human resources and systems needed to sustain the site.

Human Systems

One important issue the evaluator identified in stakeholder interviews is the type and level of human resources needed to move ExhibitFiles into the future. Some respondents expressed the idea that since ExhibitFiles was up and running, human resources could be minimal, as in basically checking to make certain the site was online and being maintained. Others—some of whom had been involved more deeply in the site's development and operation—noted the roles of the PI in soliciting and monitoring contributions and in organizing core contributors' efforts. These and other respondents expressed the need for extended formal partnership with associations and groups. Still others—some of whom had served on the initial team of core contributors—pointed out there is more and more competition for exhibit practitioner time, particularly that not directly compensated by associations, museums, or for-profit exhibit design firms.

Clearly, there were different understandings of the level of human resources needed to sustain the website. There were also different expectations as to if and how the site should continue to grow and expand its influence and impact. In this section we explore the following questions:

- What human resources and systems are needed to operate ExhibitFiles at its current level?
- What are the implications for human resources and systems for the changes recommended by users?

To date, ExhibitFiles' system of human resources has been funded through the NFS project grant. This system was used to develop the site and then to move it into an operational mode. Figure 32 shows this configuration of human resources. This system can be described through three primary groups: the Project Team, the Core Contributors, and the Contributors. The relationship among these groups is quite different from the system employed by association websites such as ASTC, AAM, or VSA, where all content is developed or curated from one source. Also, the group system is quite different from that associated with social media sites such as LinkedIn and Facebook, where an infrastructure is available and there are few explicit goals or aims for the types and range of content.

The PI has been providing leadership, management, and access to professional networks. Individuals from both Ideum and Independent X also have served on the project team and provided leadership and access to their individual professional networks. An explicit strategy in the development of the site was leveraging personal professional networks to elicit participation and contributions. As is the case with the PI, they each have published a number of case studies, reviews, and blogs reflecting their own experiences as exhibit practitioners. All these individuals have substantial professional networks,

experience, and are well-know among many exhibit practitioners, both in science and other types of museums. Core contributors have had the role to directly contribute content and have been encouraged to solicit content from others.

Many of these individuals have extensive personal professional networks and several have been serving as current board members of NAME. In 2011, the NAME Board authorized the editor of *The Exhibitionist*, the NAME professional journal, to post reviews on ExhibitFiles that had been developed for *The Exhibitionist.*

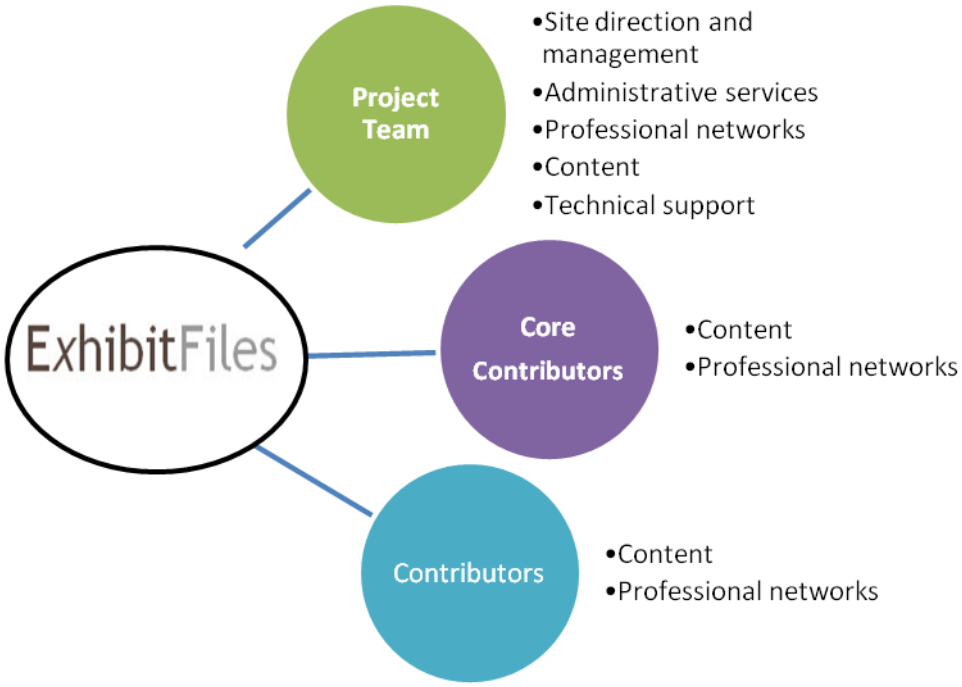

Figure 32. Current human system supporting ExhibitFiles.

To provide further information about the human resources needed to operate the site, the PI, at the request of the evaluator, developed job descriptions for the two primary roles that have supported ExhibitFiles after it reached an operational stage. These are included in Appendix C as two roles, ExhibitFiles Director and ExhibitFiles Technical Support. Both these roles would be needed to continue to operate the site as it currently exists.

Yet several other issues and concerns in this study suggest that for ExhibitFiles to go forward in a sustainable manner, the site will need to (1) continue to have active set of core contributors; (2) stay up-to-date with trends in social media, (3) develop more explicit partnerships with other associations; and (4) undergo some major redevelopment to accommodate its current size and keep up to date with current software and changes in expectations among site users.

First, core contributors played an important role in the site development, and many authored case studies that were available by the time the site opened in April 2007. Through the first three years of the grant (2006 through 2009), modest funding was available for stipends for core contributors. After that date, core contributors have participated on a voluntary basis. Participation by core team members varied greatly. Some did not contribute case studies or reviews, even when receiving stipends. Others contributed frequently during periods when they did and did not received stipends. As discussed earlier in this report, early 2010 marked the end of significant numbers of case study contributions to the site. Yet in the Awareness and Branding Survey, users indicated they wanted more case studies of noteworthy and historic exhibitions—a need also cited in the remedial evaluation (Tisdal, 2010). Documenting these influential exhibitions, particularly those funded by NSF, was one initial goal of the project. Selecting, managing, and communicating with core contributors is a time intensive role for ExhibitFiles Director, yet this strategy has been an effective one in developing active, ongoing participation.

Second, the ExhibitFiles Director will need to stay up-to-date with trends in social media and implement appropriate strategies and methods to accomplish the site's purpose. Badging (i.e. recognizing and rewarding participation), cross-platform access to content (e.g. website, Twitter, Facebook, and LinkedIn), and the development of explicit niche functions are all current and ongoing trends that ExhibitFiles must reflect stay in the mix of relevant online resources. To date the PI has posted over 500 tweets and retweets, and there are 389 Twitter followers for ExhibitFiles. This is a response social media trends during the life of the site.

Third, formal partnerships with associations may be needed to sustain ExhibitFiles growth and impact. Yet this work also may be challenging and time-consuming. During 2011, the ExhibitFiles PI submitted to the NAME Board a formal partnership proposal to further the aim of documenting influential exhibitions. Specifically, the PI proposed a joint initiative between ExhibitFiles and NAME to solicit and provide awards for the contribution of case studies of influential exhibitions. The NAME Board, while generally supportive of this proposal, did not want to go forward until ongoing funding and leadership of ExhibitFiles was in place after the grant funding ended.

The evaluator attended a segment of the NAME Board meeting during the proposal discussion and interviewed others who had attended. The evaluator observed that like many associations of busy professionals contributing their time on a volunteer basis, developing a partnership with NAME will take time to develop. Partners will need to negotiate roles and responsibilities that can be reasonably undertaken by professionals juggling work schedule demands and other work and association priorities. Observing this process indicated that partnerships, particularly with professional associations having few or no staff members to provide stable infrastructure, would add a substantial amount of time to the role of an ExhibitFiles Director.

Finally, several changes to the site indicated by both remedial and summative data may require a website redesign. These aspects were discussed in the previous section and include substantially improved search features, the capacity for to synthesize information across individual reviews or case studies, tutorials or FAQs, and places for discussion. A revised homepage may be required to meet these

user-expressed needs for improved introduction and access to content. Changes to the website, such as those described, substantially increase the role of a web-services company or firm from offering technical support to providing design and development services. This changed role would require substantially different sets of skills and a much greater estimate of staff time than that reflected in the Technical Support job description in Appendix C.

Conclusions and Recommendations

This section discusses conclusions and recommendations based on evidence presented in the Clarification of Issues and Concerns section of the report. Two overarching question are addressed:

- In what ways and to what extent is ExhibitFiles worth sustaining after the funding period ends?
- What are the requirements to sustain the online site at a useful level after funding ends?

Overall, in terms of levels of membership, numbers of user-authored contributions, and level of traffic on the site, ExhibitFiles has far exceeded its original expectations of the project team as they envisioned the site in 2006. A high level of awareness and a significant user base among exhibit practitioners in science museums and those working as freelancers and in exhibit design firms appears to have been accomplished. An extensive database of case studies and reviews has been developed. The site provides a important archive of NSF-ISE-funded exhibitions, in addition to providing home for the documentation and collective memory of exhibit practitioners for numerous other historic and influential exhibitions. Over the life of the website, museum studies and education programs have discovered it as a useful resource for developing emerging professionals. Experienced and senior career-stage practitioners have used the site to document and refine their own observations of exhibitions across a wide range of museums. Data related to almost every issue and concern explored in this study support the conclusion that the website is worth sustaining. But a substantial redesign of the site now may be needed, precisely because the site has grown beyond its original vision.

Exploration of the issues and concerns in this study clarified several uncertainties and confirmed the perceptions of some stakeholders and disconfirmed others. Site content is primarily focused on informal science education, but exhibit practitioners themselves appear to look across all types of museums for best practices, ideas, and inspiration. Exhibit practitioners, even those working primarily with informal science content, may choose professional development experiences that provide contact with diverse and creative approaches to content and visitor experience.

Important steps have been accomplished in providing a place for the collective memory of exhibit designers so they can build on past accomplishments and identify new and better ways of serving visitors. Considerable numbers of NSF-funded exhibits and exhibitions have been documented. But there are gaps in the collection of case studies, particularly in those of several influential exhibitions cited in this study and others that are part of the AAM Excellence in Exhibitions competition.

The pattern running across all the issues and concerns explored in this study was that sustaining ExhibitFiles in a way that allows the current user base to make the most of the resources available will require significant human resources in terms of website design and development. Expanding the user base, a step that appears both appropriate and beneficial for exhibit practitioners working in a variety of contexts, would require substantial leadership and the development of partnerships.

Sustaining the site at any level will require human, technical, and financial resources. While this study focused on human resources and systems, additional technical and financial resources are implicit requirements related to the findings. Clearly, it will take time to plan and prepare for any major

redevelopment of the website or to move toward higher levels of activity. Based on this study, there do appear to be different levels of priority for continuation of activity and changes.

The highest priorities for sustainability are included in the two job descriptions in Appendix C. These are basic operational requirements. Based on the findings of this study, continuing the posting and delivery of push e-newsletters to maintain traffic and keep the site in the consciousness of current users is a very high priority. Any level of site change will require planning and development time. Meanwhile, basic site management and technical support are needed.

At the next level of priority is website redesign to better serve the current core user base of exhibition practitioners working in science museums and as freelance designers and in exhibit design firms. Awareness of the site is higher among this group and the existing content and capabilities of the site are best matched to their needs.

Based on the findings of this study, the highest priority to serve this group is a redesign of the site to improve access to the information in the large collection of case studies and reviews. The number of members, case studies, and reviews simply has outgrown the assumption that users can easily browse through lists to identify interesting or useful content or people with specific expertise with whom to collaborate. Improved access to content includes, but is not limited to, improvements in basic key word searching to locate case studies and reviews by content topic, design strategies, formats discussed, and location. Content topics are very important for both exhibit practitioners and grant writers in developing proposals and plans for new exhibitions. Design strategies, such as lessons learned about the value of big ideas and story lines or universal design, provide the basis for accessibility to best practices. A clear set of format categories, which of course will have to be periodically updated, is also needed. In addition, users need to be able to location exhibits and exhibitions by location. Viewing exhibition as part of personal and professional travel appears to be a prominent form of professional development for exhibit practitioners. All these are uses of the site, documented in this study and in the remedial evaluation. The high priority to improve access to content is based on findings in the remedial study and on changes recommended by users.

There are consistent calls from ExhibitFiles users across both the remedial and summative studies for additional places to discuss best practices. Based on the large and ever-growing number of LinkedIn groups, blogs, and websites, those planning the future of ExhibitFiles will want to be careful not to duplicate the types of immediate, ongoing conversation available through other sites. Another approach would be capabilities for users to develop and store lists of case studies, reviews, and Bits they located for specific uses and share them with others. Amazon.com and howtosmile.org employ this strategy, which allows access to grow organically through user-contributed content as well as through search functions. Lists also could prompt ideas of application of site content; for example, “5 Reviews I Gave My Students as Models for Class Assignments” or “Case Studies and Reviews I Used to Plan My Trip to New York.” Lists and improved search capabilities could work together to provide improved accessibility to content. These changes are among the highest priorities to serve the current user base with existing content.

Another priority in updating the site to better serve the current user base would be to provide site orientation FAQs and guidelines toward the development of case studies and reviews. This recommendation does mean interfering with the clean, simple design style of the site that users

indicated in the remedial evaluation that they liked. As mentioned earlier, sites such as the popular project management system Basecamp, and even customer sites for smartphones, provide orientation videos and tutorials linked from the home page.

Current homepage features, such as case studies and reviews, Twitter feeds, and area tabs, appear to work well. But in both the Member Survey and the Awareness and Branding Survey, several ExhibitFiles users recommended adding clear statements about the site's purpose and possible uses. These high-priority changes are needed to serve the current user base. In 2012, ExhibitFiles will be have been online for six years. In the rapidly changing world of the Internet, the need for site redevelopment at this stage in ExhibitFiles' life would not be unusual.

Filling in the gaps among historic and influential projects, specifically in science museums, is the next level of priority. This recommendation is based on the original vision for ExhibitFiles to be an online resource that preserves collective memory for the practice of exhibit design and development. Exhibitions included in McLean and McEver's 2004 book would be on this list, along with exhibitions nominated for AAM's Excellence in Exhibition program and NSF-funded projects, many of which have been very influential. The PI's proposal to the NAME Board could be one tactic to accomplish this work. Another would be the development of partnerships with museum studies and education programs to pair students with the exhibit practitioners who worked historic projects to assist in the development of case studies. Given the level of effort required to solicit, nurture, and facilitate the case studies published between 2007 and 2010, it is likely that some form of partnership may be needed to accomplish this work.

Of importance, but at the next level of priority, are steps to expand the user base across all types of museums and beyond U.S.-based exhibit practitioners. Members of the stakeholding groups who are currently members of the site clearly recognize ExhibitFiles' value and potential. Calls for greater numbers of contributions across all types of museums and from international sites were identified in both the summative and remedial studies. If similar websites were to be developed for each museum type across different geographic locations, scare resources would be wasted for a field that is already facing economic challenges. Yet, as one of the CAISE staff members interviewed for this study noted, large-scale sites need the capability for subgroups to develop so that face-to-face relationships can be extended and specific as well as common interests can be explored. The level of site redevelopment to accommodate this capability would need to be carefully considered.

Expanding the ExhibitFiles user base and content to better represent museums of all types and geographic location is recommended but only after careful strategic planning as to how it could be accomplished through human networks and information systems. Based on the Awareness and Branding Survey, the current levels of awareness among exhibit practitioners in art, history, and children's museums is much lower than that among science museum-based exhibit practitioners or those working as freelance designers or in exhibit design firms. Information about niche indicates that exhibit practitioners in these non-science museums share NAME as an information source but also have ecology of online resources somewhat different from that of exhibit practitioners in informal learning institutions.

Clearly, this study shows that ASTC, as the sponsor of ExhibitFiles, was well suited to raise awareness of the site among science museum exhibit practitioners and to organize the human resources to facilitate

the contribution of content among informal science education exhibit practitioners. AASLH is in a similar situation among history museums operating numerous online groups and providing professional development. Based on the Awareness and Branding Survey, AAM is clearly a central information and professional development resource for almost all practitioners in museums. Researchers and evaluators, many of whom are members of VSA and the Committee on Audience Research and Evaluation (CARE), also have networks across museums of different types. Finding organizational partners at the center of information and professional development ecologies appears the best strategy for expanding the user base and soliciting and nurturing the development of content. But developing organization partnerships can be challenging. Benefits for associations, and roles and responsibilities, would need to be carefully defined. Yet if these partnerships cannot be established, exhibit practitioners may not have access to the best practices and examples of excellence from their colleagues working in different types of museums or in another country.

The issues and concerns explored in this study were based on the perspectives of a wide variety of stakeholding groups. Evidence in this study supports a conclusion that the infrastructure supporting informal science institutions does appear to be increasingly coherent, with a shared ecology of information among exhibit practitioners working in and providing services to these institutions.

ExhibitFiles does appear to be well worth sustaining, but several changes to the website are needed to better serve the current user base. Capacities to access and synthesize content across individual postings are required. Expanding the user base and making intentional efforts to add content across other types of museums and geographic locations are also recommended, but only after careful consideration of the implications for human systems, technology, and levels of financial support that would be needed to develop and operate a site for a larger number of members with a greater diversity of interests.

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Appendix A. Awareness and Branding Survey

Online Resources for Practitioners in Informal Learning

Introduction

Thank you for responding to the request to take this survey. This information will be used as part of the summative evaluation for an online professional development site for informal learning practitioners. Information about awareness of this site and the career patterns of users and non-users is very important in providing a clear picture of its effectiveness. The survey has been tested and timed and will take between 5 to 10 minutes. Please take the survey only once.

Information from this survey may not directly benefit you, but it will add to the growing body of information about professional development in informal learning. Everyone who completes the survey and provides a name and email will be placed in a drawing for four $25 gift certificates to Amazon.com.

Names and emails will not be used in association with your responses. Names and emails will be used only to communicate about the award of gift certificates and to check for duplicated entries. All responses will be confidential and information will be used only in aggregate.

To begin the survey click on the "next" button at the bottom of this page. After completing the on-line questionnaire, please press the "done" button on the last page.

Please submit your survey by October 28, 2011.

If you have any questions about this survey, please contact Carey Tisdal at Tisdal Consulting, 314-496-9097 or ctisdal@sbcglobal.net.

Online Resources Awareness and Use

1. Which of these online resources have you used?
(Select all that apply)

- ☐ Assessment Tools in Informal Science (ATIS)–www.pearweb.org/atis
- ☐ Center for Advancement of Informal Science Education (CAISE)–caise.insci.org
- ☐ InformalScience.org
- ☐ Informal Commons (IC)–informalcommons.org
- ☐ National Association for Museum Exhibition (NAME)– name-aam.org
- ☐ Open Exhibits– openexhibits.org
- ☐ Visitor Studies Association (VSA)–visitorstudies.org

2. What other online resource have you used for informal learning professional development?

Online Resources for Practitioners in Informal Learning

3. How familiar are you with ExhibitFiles?

(Select one)

- ☐ Never heard of it
- ☐ I am aware but have never used it
- ☐ Use it only sometimes
- ☐ Use it on a regular basis

Perceptions of ExhibitFiles

4. To what extent does each of the following statements describe ExhibitFiles?

Please rate each item from 1=Strongly disagree to 5=Strongly agree. Use NA to indicate you have no opinion of a description.

	1	2	3	4	5	NA
Provides many examples of international exhibit practice.	○	○	○	○	○	○
Intended for exhibit practitioners working in all types of museums.	○	○	○	○	○	○
Provides a place for lively discussion.	○	○	○	○	○	○
Provides a place to keep up-to-date on current exhibition practices and innovations.	○	○	○	○	○	○
Useful place to review the landscape when developing proposals for grant funding.	○	○	○	○	○	○
Provides a place where I can openly share lessons learned about exhibit practice.	○	○	○	○	○	○

ExhibitFiles Use

Online Resources for Practitioners in Informal Learning

5. How did you first find out about ExhibitFiles?
(Select one)

- ◯ Conference session
- ◯ Article in The Exhibitionist
- ◯ ISEN listserv
- ◯ ASTC Dimensions article
- ◯ ASTC website
- ◯ CAISE website
- ◯ Comments or recommendations by a colleague
- ◯ Search engine
- ◯ Phone call or email from site developers to contribute
- ◯ Cannot remember

Other (please specify)

6. How often do you visit the ExhibitFiles website?
(Select one)

- ◯ More than once a day
- ◯ Once a day
- ◯ Several times a week
- ◯ Once a week
- ◯ Several times a month
- ◯ Once a month
- ◯ Several times a year
- ◯ Once a year
- ◯ Only visited the day I registered

7. What is it that you would most like to change about ExhibitFiles?

Online Resources for Practitioners in Informal Learning

8. Would you recommend ExhibitFiles to a colleague or associate?
(Select one)

- ◯ Definitely Not
- ◯ Probably Not
- ◯ Not sure
- ◯ Probably
- ◯ Definitely

Current Position

9. What is your current work ZIP or Postal Code?

ZIP Code

Postal Code

10. In which of the following sectors are you currently employed?
(Select one)

- ◯ Museum
- ◯ Non-Profit (including professional associations serving the museum field)
- ◯ Government
- ◯ Museum Product or Service Provider (e.g., consultants, design firms)
- ◯ University/Higher Education
- ◯ Primary and/or Secondary Education
- ◯ Early Childhood/Preschool Education
- ◯ Currently a student

Other (please specify)

Museum Types

Online Resources for Practitioners in Informal Learning

11. Please indicate which one of the following best describes your institution: (Select one)

- ◯ Aquarium
- ◯ Arboretum/Botanic Garden
- ◯ Art Museum
- ◯ Children's Museum
- ◯ General Museum
- ◯ Historic House/Site
- ◯ History Museum/Historical Society
- ◯ Natural History/Anthropology Museum
- ◯ Nature Center
- ◯ Planetarium
- ◯ Zoo
- ◯ Specialized Museum
- ◯ Science/Technology Center/Museum

Other (please specify)

Museum Size

12. How much exhibit space does your museum have? (Select one)

- ◯ Less that 12,000 square feet/1,115 square meters
- ◯ 12,000-25,000 square feet/1,115-2,322 square meters
- ◯ 25,000-50,000 square feet/2,322-4,645 square meters
- ◯ More than 50,000 square feet/more than 4645 square meters

Museum Positions

This set of positions was adapted a national workforce survey for museum professionals. It may not precisely match the position titles in your organization. In this survey, we are more interested in the nature of the work you do than the level of your position. Please select the "best match."

Online Resources for Practitioners in Informal Learning

13. Which of the following position titles best describes your current position in a museum?(Select one)

- ◯ Executive Vice President/Deputy Director/Chief Operating Officer
- ◯ CFO/Director of Finance/Controller
- ◯ Vice President/Director of Development
- ◯ Director of Foundation and/or Corporate Relations
- ◯ Director of Individual Giving
- ◯ Director of Major Gifts
- ◯ Capital Campaign Director
- ◯ Vice President/Director of Communications/PR/Marketing
- ◯ Vice President/Director of Education
- ◯ Early Childhood Coordinator
- ◯ Vice President/Director of Exhibits
- ◯ Manager/Developer of Exhibits
- ◯ Exhibit Designer/Builder
- ◯ Exhibit Technician
- ◯ Vice President/Director/Manager of Human Resources
- ◯ Vice President/Director of Visitor Services
- ◯ Visitor Services Manager
- ◯ Research/Evaluation Manager
- ◯ Membership Director/Manager
- ◯ Volunteer Coordinator
- ◯ Floor Manager
- ◯ Manager of Theater (projection, not stage)/Planetarium Programs
- ◯ Special Events Manager
- ◯ Manager of Public Programs/School Programs/Outreach Coordinator
- ◯ My job includes responsibilities reflected in more than one of these positions

Other (please specify)

Multiple Areas of Responsibility

Online Resources for Practitioners in Informal Learning

14. What is your current job title?

15. In your current position, in which of the following areas do you have responsibilities? (Select all that apply)

- [ ] Development/grantwriting/fundraising
- [ ] Communications/PR/Marketing
- [ ] Education
- [ ] Exhibits
- [ ] Human Resources
- [ ] Visitor Services
- [ ] Membership
- [ ] Volunteer coordination
- [ ] Theater/Planetariums
- [ ] Public Programs/School Programs/Outreach

Other (please specify)

Museum Products and Services

16. In your current position, what products or services do you provide to museums? (Select all that apply)

- [ ] Evaluation
- [ ] Exhibit design/fabrication
- [ ] Exhibition development
- [ ] Fundraising/grant writing
- [ ] Interpretive planning
- [ ] Management of traveling exhibitions
- [ ] Market research
- [ ] Strategic planning
- [ ] Digital media development

Other (please specify)

Online Resources for Practitioners in Informal Learning

Previous Positions

The next two questions ask about other jobs in cultural and educational sector you have held throughout your career.

17. In which of the following sectors were you employed in any job prior to your current position?(Select all that apply)

- [ ] Museum
- [ ] Non-Profit (including professional associations serving the museum field)
- [ ] Government
- [ ] Museum Product or Service Provider
- [ ] University/Higher Education
- [ ] Primary and/or Secondary Education
- [ ] Early Childhood/Preschool Education
- [ ] Previously a student
- [ ] None

18. In what types of museum (s) were you employed in any job prior to your current position position? (Select all that apply)

- [ ] Aquarium
- [ ] Arboretum/Botanic Garden
- [ ] Art Museum
- [ ] Children's Museum
- [ ] General Museum
- [ ] Historic House/Site
- [ ] History Museum/Historical Society
- [ ] Natural History/Anthropology Museum
- [ ] Nature Center
- [ ] Planetarium
- [ ] Zoo
- [ ] Specialized Museum
- [ ] Science/Technology Center/Museum
- [ ] None (I have never worked in a museum)

Demographics

Online Resources for Practitioners in Informal Learning

19. How would you describe your career stage? (Select one)

- ◯ Student
- ◯ Entry level professional
- ◯ Experienced professional
- ◯ Senior professional
- ◯ Retired

20. Gender?(Select one)

- ◯ Male
- ◯ Female

21. Which of the following categories contains your age? (Select one)

- ◯ 18 to 24
- ◯ 25 to 34
- ◯ 35 to 44
- ◯ 45 to 54
- ◯ 55 to 64
- ◯ 65 and older

Name and Email for Gift Cards

22. If you wish to be included in a drawing for four $25 gift certificates from Amazon.com, please provide your name and email address.

First Name

Last Name

Email address

Thank you for taking the time to provide this information. Please press the "done" button below to submit your survey.

Appendix B: Member Characteristics

Table B.1. Member—Country of Residence (*N* = 2,008)

Country	Number	Percent	Country	Number	Percent
United States	1,349	67.2	Ecuador	3	0.1
Canada	125	6.2	Malaysia	3	0.1
United Kingdom	98	4.9	Malta	3	0.1
Australia	46	2.3	Russia	3	0.1
France	20	1.0	Azerbaijan	2	0.1
Netherlands	19	0.9	Czech Republic	2	0.1
India	17	0.8	Egypt	2	0.1
Italy	17	0.8	Greece	2	0.1
New Zealand	13	0.6	Indonesia	2	0.1
Germany	12	0.6	Ireland	2	0.1
Mexico	11	0.5	Pakistan	2	0.1
Denmark	10	0.5	Philippines	2	0.1
Sweden	10	0.5	Poland	2	0.1
Finland	9	0.4	Qatar	2	0.1
Spain	9	0.4	Brunei Darussalam	1	0.0
Turkey	9	0.4	Chile	1	0.0
Korea, Republic of	8	0.4	Colombia	1	0.0
Norway	7	0.3	Hungary	1	0.0
South Africa	7	0.3	Iceland	1	0.0
Brazil	6	0.3	Japan	1	0.0
Portugal	6	0.3	Saudi Arabia	1	0.0
Belgium	5	0.2	Slovakia	1	0.0
China	5	0.2	Syria	1	0.0
Singapore	5	0.2	Taiwan, Province of China	1	0.0
Israel	4	0.2	Trinidad	1	0.0
Switzerland	4	0.2	Ukraine	1	0.0
UAE	4	0.2	Venezuela	1	0.0
Argentina	3	0.1	Missing	119	5.9
Austria	3	0.1			
Chinese Taipei	3	0.1	*Total*	*2,008*	*100.0*

Table B.2. U.S. ExhibitFiles Members—States of Residence (*N* = 1,349)

State	Frequency	Percent	State	Frequency	Percent
CA	206	15.3	IA	9	0.7
NY	157	11.6	WI	9	0.7
DC	112	8.3	AL	8	0.6
MA	91	6.7	NV	8	0.6
PA	68	5.0	TN	8	0.6
IL	47	3.5	HI	6	0.4
WA	47	3.5	ME	6	0.4
MN	40	3.0	MT	6	0.4
OR	38	2.8	VT	6	0.4
TX	38	2.8	KY	5	0.4
FL	35	2.6	NH	5	0.4
MI	30	2.2	OK	5	0.4
NC	30	2.2	ID	4	0.3
OH	29	2.1	SC	4	0.3
NM	27	2.0	AK	3	0.2
MD	25	1.9	DE	3	0.2
MO	24	1.8	KS	3	0.2
CO	23	1.7	WV	3	0.2
VA	23	1.7	AR	2	0.1
UT	20	1.5	LA	2	0.1
IN	18	1.3	NE	2	0.1
NJ	18	1.3	SD	2	0.1
GA	17	1.3	ND	1	0.1
CT	16	1.2	WY	1	0.1
AZ	12	0.9	Missing	37	2.7
RI	10	0.7	*Total*	*1,349*	*100.0*

Table B.3. ExhibitFiles Members—Countries of Residence

Country	Number	Percent	Country	Number	Percent
Brunei Darussalam	1	0.0	UAE	4	0.1
Chile	1	0.0	Belgium	5	0.1
Japan	1	0.0	Malaysia	5	0.1
Kuwait	1	0.0	Singapore	5	0.1
Saudi Arabia	1	0.0	Switzerland	5	0.1
Senegal	1	0.0	Philippines	6	0.2
Taiwan, Province of China	1	0.0	Brazil	7	0.2
Trinidad	1	0.0	China	8	0.2
Turkey	1	0.0	Israel	8	0.2
Ukraine	1	0.0	Korea	9	0.2
United Arab Emirates	1	0.0	Norway	9	0.2
Venezuela	1	0.0	Finland	10	0.3
Azerbaijan	2	0.1	Sweden	11	0.3
Colombia	2	0.1	Portugal	12	0.3
Egypt	2	0.1	Denmark	13	0.3
Indonesia	2	0.1	Germany	13	0.3
Ireland	2	0.1	Spain	13	0.3
Mauritius	2	0.1	Mexico	14	0.4
Nepal	2	0.1	United Kingdom	17	0.4
Pakistan	2	0.1	Italy	18	0.5
Qatar	2	0.1	New Zealand	20	0.5
Thailand	2	0.1	India	21	0.5
Wales, U.K.	3	0.1	Netherlands	24	0.6
Austria	3	0.1	France	25	0.6
Chinese Taipei	3	0.1	Australia	59	1.5
Greece	3	0.1	England, U.K.	87	2.3
Korea, Republic of	3	0.1	Canada	149	3.9
Malta	3	0.1	United States	1,673	43.4
Argentina	4	0.1	None provided	1,648	42.8

Appendix C: Job Descriptions

ExhibitFiles Director

Purpose
The ExhibitFiles Director is responsible for nurturing/cultivating the ExhibitFiles community and its growing collection of exhibition records and reviews as a resource for the museum exhibition field. This includes encouraging memberships and contributions; writing and sending/posting communications via multiple media, including e-mailed newsletters, blog posts, Tweets, and Facebook posts; maintaining site standards and policies; and seeking partners and support.

Responsibilities
The ExhibitFiles Director:
Community Engagement

- Encourages contributions to the site and solicits guest blog posts
- Consults with Core Group and other stakeholders to determine policy and build participation and content
- Writes and publishes blog posts and other content
- Prepares and sends newsletter
- Maintains Facebook and Twitter feed to highlight posts and encourage repeat visits

Editorial

- Reviews all community-contributed content, including member profiles, case studies, reviews, and Bits
- Selects new content to feature and highlight via Facebook, Twitter, and in the newsletter

Technical/Administrative

- Responds to member queries
- Reports to funders
- Reviews and approves new member requests
- Tracks usage statistics
- Monitors and deletes spam
- Serves as liaison with technical support staff

Qualifications

- Experience working in and knowledge of museum exhibition field—history, people, organizations, literature, issues, trends
- Excellent communication, writing/editing, and interpersonal skills
- Experience working with basic web and social media tools—HTML, Photoshop, WordPress, web hosting services, emailed newsletter services (iContact), Facebook, Twitter
- Knowledge of web analytics and tracking tools (Google Analytics)
- Experience working with web designers and programmers
- Experience in non-profit organization, budgeting, financial management and reporting
- Bachelor's degree. Museum studies degree could be plus.

Requirements

- 24/7 scanning of the site to contain spam, respond to user questions, review new posts, approve new members
- 4-5 days total over course of each month
- Computer, Internet, and telephone access
- Photoshop desirable
- Work can take place anywhere, but periodic face-to-face meetings important, typically in conjunction with ASTC, AAM annual conferences
- Depends on availability of programming support, maintenance of domain name and web hosting

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ExhibitFiles Technical Support

Purpose
ExhibitFiles Technical Support is responsible for the smooth functioning of the site and associated media, including troubleshooting and fixing software problems and making periodic updates in programming and design (including updates to Word Press) to respond to user feedback. Technical Support also serves as backup for the ExhibitFiles Director in flagging and deleting spam accounts, posts, and comments.

Responsibilities
- Monitors site daily to identify technical problems
- Assures continuous functioning of all features of the site
- Diagnoses and fixes hardware and software problems as they arise, takes needed measures to prevent attacks and spam
- Updates software as needed
- Assists in troubleshooting technical problems with social media

Qualifications
ExhibitFiles runs on custom software built in Ruby on Rails. Technical Support should have competence in working with this programming language in addition to skill in basic web and social media tools.

Requirements
- Daily scanning of the site to flag technical problems, contain spam
- Average 2days total over course of each month to respond to questions and requests from ExhibitFiles Director
- Computer, Internet and telephone access
- Work can take place anywhere, but periodic face-to-face meetings important, typically in conjunction with ASTC, AAM annual conferences

Notes:
- This position also may provide web hosting services. If not, ASTC will need to provide for web hosting (including monitoring for any server shut-downs and restarting the site if needed).

- The site needs periodic updates in programming and design to respond to user feedback and improve site function and utility. Although part of the day-to-day technical support function, this team is integral to that process.

- Assumes that ASTC maintains domain name registration, needed updates to terms of use/privacy policy.

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